

AUXIER & ASSOCIATES, INC.

Westlake Landfill Soil

**STANDARD LEVEL IV
REPORT OF ANALYSIS**

WORK ORDER #16-03102-OR

April 28, 2016

**EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN**

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**Eberline Services – Oak Ridge Laboratory
LABORATORY DATA SUPPORT CHECKLIST**

MP-001-3

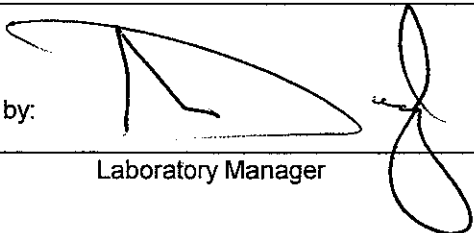
Eberline Services Work Order # 16 - 03102

The checklist items listed below are to be initialed by appropriate staff upon completion/verification.

Date for Partial	Initials	Date	Initials	Checklist Items
		3-21-16	SEB	Sample Log-In
		4/13/16	KB	Data Compilation
		4-20-16	MT	First Technical Data Review
		4/20/16	US	Second Technical Data Review
		04/20/16	EJ	Data Entry/Electronic Deliverable
		04/20/16	EJ	Case Narrative
		4/27/16	KB	Electronic Deliverable Proof
		4/27/16	US	Samples Analyzed within Holding Time Yes? <input checked="" type="checkbox"/> No? <input type="checkbox"/>
		4/27/16	US	QA/QC Review
		04/13/16	EJ	Client in Possession of Data Electronic or Hard Copy
				Invoiced by Laboratory

Technical/Clerical Corrections, Signatures Needed, Problems, Etc	Date/Initials

Date package approved by:


Laboratory Manager4/28/16
Date

Copy No. _____

Radiochemistry Services


: 00000

SECTION I
CHAIN OF CUSTODY

№


EBERLINE
SERVICE

[illegible]

 EBERLINE SERVICES Oak Ridge Laboratory	<h1>Internal Chain of Custody</h1>	Work Order #	16-03102
		Lab Deadline	4/12/2016
		Analysis	UUISO - Level 4
		Sample Matrix	Soil/Solid


Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	36	K1.4
	05	38	K1.4
	06	34	K1.4
REPORT ON DRY WEIGHT BASIS			

	Location (circle one)					Initials	Date
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room 0900	Kengyig	3-22-16
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room 0810	Kengyig	3-23-16
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	J. O. Lopez	3/23/16 0810
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	J. O. Lopez	3/23/16 0810
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	J. O. Lopez	3/23/16 0810
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	J. O. Lopez	3/23/16 0810
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	J. O. Lopez	3/23/16 0810
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	J. O. Lopez	3/23/16 0810
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Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	J. O. Lopez	3/23/16 0810
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	J. O. Lopez	3/23/16 0810
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	J. O. Lopez	3/23/16 0810
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	J. O. Lopez	3/23/16 0810
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room	J. O. Lopez	3/23/16 0810

 EBERLINE SERVICES Oak Ridge Laboratory	<h1>Internal Chain of Custody</h1>	Work Order #	16-03102
		Lab Deadline	4/12/2016
		Analysis	ThISO - Level 4
		Sample Matrix	Soil/Solid

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
	04	36	K1.4
	05	38	K1.4
	06	34	K1.4
REPORT ON DRY WEIGHT BASIS			

	Location (circle one)					Initials	Date
Received by	<u>Sample Storage</u>	<u>Rough Prep</u>	Prep	Separations	Count Room 0900	Wing	3-22-16
Relinquished by	Sample Storage	<u>Rough Prep</u>	Prep	Separations	Count Room 0910	Wing	3-23-16
Received by	Sample Storage	Rough Prep	<u>Prep</u>	Separations	Count Room	JROPE	3/23/16 0810
Relinquished by	Sample Storage	Rough Prep	<u>Prep</u>	Separations	Count Room	JROPE	4/6/16 0410
Received by	Sample Storage	Rough Prep	Prep	<u>Separations</u>	Count Room	Wing	4-6-16 0410
Relinquished by	Sample Storage	Rough Prep	Prep	<u>Separations</u>	Count Room	Wing	4-6-16 0957
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room	KB	4/8/16 1750
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	<u>Sample Storage</u>	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

 EBERLINE SERVICES Oak Ridge Laboratory	<h1>Internal Chain of Custody</h1>	Work Order #	16-03102
		Lab Deadline	4/12/2016
		Analysis	Gamma - Level 4
		Sample Matrix	Soil/Solid

Comments	Sample Fraction	HP 210 / 270 Detector Activity	Storage Location
21 day ingrowth – Report Ac228, Bi214, K40, Pa231, Pb210/212/214, Ra226 from Bi214, Ra228 from Ac228, Tl208 & Th234.	04	36	K1.4
	05	38	K1.4
	06	34	K1.4
REPORT ON DRY WEIGHT BASIS			

	Location (circle one)					Initials	Date
Received by	<u>Sample Storage</u>	<u>Rough Prep</u>	Prep	Separations	Count Room	0900 <i>King</i>	3-22-16
Relinquished by	Sample Storage	<u>Rough Prep</u>	Prep	Separations	Count Room	1235 <i>King</i>	3-23-16
Received by	Sample Storage	Rough Prep	Prep	Separations	<u>Count Room</u>	<i>KB</i> 3/23/16	1240
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	<u>Count Room</u>	<i>KB</i> 4/13/16	1418
Received by	<u>Sample Storage</u>	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Received by	Sample Storage	Rough Prep	Prep	Separations	Count Room		
Relinquished by	Sample Storage	Rough Prep	Prep	Separations	Count Room		

SECTION II
SAMPLE ACKNOWLEDGEMENT

[illegible]

**Eberline Services – Oak Ridge Laboratory****SAMPLE RECEIPT CHECKLIST**

MP-001-2

WORK ORDER # **16 - 03102**

SAMPLE MATRIX/MATRICES:

(CIRCLE ONE OR BOTH)

AQUEOUS

NON-AQUEOUS

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	<u>Y</u>	N	
If aqueous, properly preserved	Y	N	<u>N/A</u>

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	<u>Y</u>	N
Unbroken on outside of package?	<u>Y</u>	N
Present on samples?	<u>Y</u>	N
Unbroken on samples?	<u>Y</u>	N
Was chain of custody present upon sample receipt?	<u>Y</u>	N

IF THE RESPONSE TO ANY OF THE ABOVE IS NO, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: _____

_____SIGNATURE: James E. BaileyDATE: 3-18-16

SECTION III
CASE NARRATIVE



EBERLINE SERVICES

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD
OAK RIDGE, TENNESSEE 37830
PHONE (865) 481-0683
FAX (865) 483-4621

EBS-OR-40649

April 28, 2016

Cecilia Greene
Auxier & Associates, Inc.
9821 Cogdill Road #1
Knoxville, TN 37932

CASE NARRATIVE Work Order # 16-03102-OR

SAMPLE RECEIPT

This work order contains three sediment samples received 03/18/2016. These samples were analyzed for Isotopic Uranium, Isotopic Thorium and Gamma Spectroscopy.

CLIENT ID

LAB ID

SEDIMENT 2016-03-16A	16-03102-04
SEDIMENT 2016-03-16B	16-03102-05
SEDIMENT 2016-03-16B DUP	16-03102-06

ANALYTICAL METHODS

Isotopic Uranium was analyzed using Method EML U-02 Modified. Isotopic Thorium was analyzed using Method EML Th-01 Modified. Gamma Spectroscopy was analyzed using Method LANL ER-130 Modified.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 2-sigma value.

Minimum Detectable Activity (MDA) values for data represented in this report are sample-specific. MDA measurements are determined based on factors and conditions including instrument settings, aliquot size and matrix type.

SPECIAL CIRCUMSTANCES

Results are reported on a "dry" weight basis.

ISOTOPIC URANIUM

Samples were prepared by removing representative aliquots from each sample followed by mixed acid digestions as appropriate. Uranium was selectively extracted by ion exchange. Uranium was eluted, micro-precipitated and mounted on micro-porous filter media. Sample activities were then determined by alpha spectroscopy using energy specific regions of interest for Uranium-234, Uranium-235 and Uranium-238. Chemical recovery was determined by the use of a Uranium-232 tracer. Activity of the Uranium-232 tracer was determined by alpha spectroscopy using an energy specific region of interest.

ANALYTICAL RESULTS CONTINUED

ISOTOPIC URANIUM CONTINUED

Samples demonstrated acceptable results for all Uranium analyses. Chemical recovery was acceptable for all samples. The Uranium-234, Uranium-235 and Uranium-238 method blank demonstrated acceptable results. Results for the Uranium-234 and Uranium-238 duplicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Uranium-235 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Uranium-234 and Uranium-238 laboratory control sample demonstrated an acceptable percent recovery.

ISOTOPIC THORIUM

Samples were prepared by removing representative aliquots from each sample followed by mixed acid digestions as appropriate. Thorium was selectively extracted by ion exchange. Thorium was eluted, micro-precipitated and mounted on micro-porous filter media. Sample activities were then determined by alpha spectroscopy using energy specific regions of interest for Thorium-227, Thorium-228, Thorium-230 and Thorium-232. Chemical recovery was determined by the use of a Thorium-229 tracer. Activity of the Thorium-229 tracer was determined by alpha spectroscopy using an energy specific region of interest.

Samples demonstrated acceptable results for all Thorium analyses. Actinium-227 results were reported from Thorium-227 assuming secular equilibrium. Chemical recovery was acceptable for all samples. The Thorium-227, Thorium-228, Thorium-230 and Thorium-232 method blank demonstrated acceptable results. Results for the Thorium-228 and Thorium-232 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Thorium-230 duplicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Thorium-228, Thorium-230 and Thorium-232 laboratory control sample demonstrated an acceptable percent recovery.

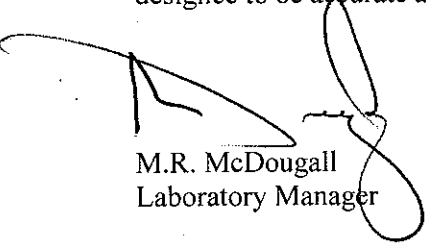
GAMMA SPECTROSCOPY

Samples were dried, homogenized and placed into appropriate gamma spectroscopy geometry containers. Samples were then sealed for 21 days to allow for ingrowth of Radon-222 and progeny. Samples were counted on High Purity Germanium (HPGe) gamma ray detectors. Energy lines from Lead-214 and Bismuth-214 were analyzed for determinations of Radium-226 activity.

Samples demonstrated acceptable results for all gamma-emitting radionuclides as reported. The method blank demonstrated acceptable results for all radionuclides as reported. Results for the Bismuth-214, Potassium-40 and Lead-214 replicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Cobalt-60 and Cesium-137 laboratory control sample demonstrated an acceptable percent recovery.

CERTIFICATION OF ACCURACY

I certify that this data report is in compliance with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.



M.R. McDougall
Laboratory Manager

Date: 4/28/2016

Eberline Analytical wants and encourages your feedback regarding our performance providing radioanalytical services. Please visit <http://www.eberlineservices.com/client.htm> to provide us with feedback on our services.

SECTION IV
ANALYTICAL RESULTS SUMMARY

Eberline Analytical Final Report of Analysis			Report To:					Work Order Details:						
			Cecilia Greene					SDG:	16-03102					
			Auxier & Associates, Inc.					Purchase Order:	WESTLAKE NCC					
			9821 Cogdill Road, Suite 1					Analysis Category:	ENVIRONMENTAL					
			Knoxville, TN 37932					Sample Matrix:	SO					
Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	CV	Report Units
16-03102-01	LCS	KNOWN	03/22/16 00:00	3/21/2016	4/11/2016	16-03102	Cobalt-60	LANL ER-130 Modified	1.37E+02	5.48E+00				pCi/g
16-03102-01	LCS	KNOWN	03/22/16 00:00	3/21/2016	4/11/2016	16-03102	Cesium-137	LANL ER-130 Modified	8.69E+01	3.48E+00				pCi/g
16-03102-01	LCS	SPIKE	03/22/16 00:00	3/21/2016	4/11/2016	16-03102	Cobalt-60	LANL ER-130 Modified	1.38E+02	7.79E+00	1.05E+01	7.44E-01	5.62E-01	pCi/g
16-03102-01	LCS	SPIKE	03/22/16 00:00	3/21/2016	4/11/2016	16-03102	Cesium-137	LANL ER-130 Modified	8.88E+01	7.27E+00	8.58E+00	9.37E-01	4.64E-01	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/13/2016	16-03102	Actinium-228	LANL ER-130 Modified	8.69E-02	7.85E-02	7.86E-02	1.64E-01	7.23E-02	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/13/2016	16-03102	Bismuth-214	LANL ER-130 Modified	-6.16E-04	4.64E-02	4.64E-02	7.39E-02	3.29E-02	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/13/2016	16-03102	Potassium-40	LANL ER-130 Modified	-3.82E-01	3.60E-01	3.61E-01	3.28E-01	1.27E-01	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/13/2016	16-03102	Protactinium-231	LANL ER-130 Modified	4.98E-02	7.34E-01	7.34E-01	1.15E+00	5.29E-01	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/13/2016	16-03102	Lead-210	LANL ER-130 Modified	4.51E-01	4.95E-01	4.95E-01	7.39E-01	3.49E-01	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/13/2016	16-03102	Lead-212	LANL ER-130 Modified	3.90E-02	3.50E-02	3.50E-02	6.07E-02	2.84E-02	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/13/2016	16-03102	Lead-214	LANL ER-130 Modified	1.31E-02	5.06E-02	5.06E-02	7.74E-02	3.55E-02	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/13/2016	16-03102	Radium-226	LANL ER-130 Modified	-6.16E-04	4.64E-02	4.64E-02	7.39E-02	3.29E-02	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/13/2016	16-03102	Radium-228	LANL ER-130 Modified	8.69E-02	7.85E-02	7.86E-02	1.64E-01	7.23E-02	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/13/2016	16-03102	Thorium-234	LANL ER-130 Modified	1.32E-01	4.28E-01	4.28E-01	5.89E-01	2.79E-01	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/13/2016	16-03102	Thallium-208	LANL ER-130 Modified	3.99E-02	5.67E-02	5.67E-02	1.07E-01	4.74E-02	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Actinium-228	LANL ER-130 Modified	9.79E-01	3.27E-01	3.31E-01	5.59E-01	2.62E-01	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Bismuth-214	LANL ER-130 Modified	1.86E+00	2.34E-01	2.53E-01	3.73E-01	1.79E-01	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Potassium-40	LANL ER-130 Modified	1.69E+01	2.40E+00	2.55E+00	1.52E+00	6.96E-01	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Protactinium-231	LANL ER-130 Modified	9.51E-01	2.17E+00	2.17E+00	3.74E+00	1.79E+00	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Lead-210	LANL ER-130 Modified	4.78E+00	1.80E+00	1.82E+00	2.74E+00	1.34E+00	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Lead-212	LANL ER-130 Modified	1.35E+00	1.80E-01	1.93E-01	3.11E-01	1.52E-01	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Lead-214	LANL ER-130 Modified	1.81E+00	2.41E-01	2.58E-01	2.92E-01	1.41E-01	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Radium-226	LANL ER-130 Modified	1.86E+00	2.34E-01	2.53E-01	3.73E-01	1.79E-01	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Radium-228	LANL ER-130 Modified	9.79E-01	3.27E-01	3.31E-01	5.59E-01	2.62E-01	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Thorium-234	LANL ER-130 Modified	2.18E+00	1.80E+00	1.80E+00	2.98E+00	1.46E+00	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Thallium-208	LANL ER-130 Modified	1.08E+00	1.92E-01	1.99E-01	5.65E-02	1.79E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original; CV=Critical Value



EBERLINE
SERVICES

EBERLINE ANALYTICAL CORPORATION

601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

Eberline Analytical

Final Report of Analysis

Report To:

Cecilia Greene
Auxier & Associates, Inc.
9821 Cogdill Road, Suite 1
Knoxville, TN 37932

Work Order Details:

SDG:

16-03102

Purchase Order:

WESTLAKE NCC

Analysis Category:

ENVIRONMENTAL

Sample Matrix:

SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	CV	Report Units
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Actinium-228	LANL ER-130 Modified	1.30E+00	2.92E-01	3.00E-01	5.70E-01	2.68E-01	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Bismuth-214	LANL ER-130 Modified	1.70E+00	2.29E-01	2.45E-01	1.01E-01	1.11E-01	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Potassium-40	LANL ER-130 Modified	1.59E+01	2.22E+00	2.36E+00	1.00E+00	4.36E-01	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Protactinium-231	LANL ER-130 Modified	5.84E-01	1.00E+00	1.00E+00	3.94E+00	1.89E+00	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Lead-210	LANL ER-130 Modified	3.32E+00	2.14E+00	2.15E+00	3.49E+00	1.71E+00	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Lead-212	LANL ER-130 Modified	1.21E+00	1.75E-01	1.86E-01	3.42E-01	1.68E-01	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Lead-214	LANL ER-130 Modified	1.86E+00	2.42E-01	2.60E-01	3.36E-01	1.63E-01	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Radium-226	LANL ER-130 Modified	1.70E+00	2.29E-01	2.45E-01	1.01E-01	1.11E-01	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Radium-228	LANL ER-130 Modified	1.30E+00	2.92E-01	3.00E-01	5.70E-01	2.68E-01	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Thorium-234	LANL ER-130 Modified	1.43E+00	1.67E+00	1.67E+00	2.24E+00	1.09E+00	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/13/2016	16-03102	Thallium-208	LANL ER-130 Modified	9.38E-01	2.15E-01	2.20E-01	5.65E-02	2.13E-01	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Actinium-228	LANL ER-130 Modified	1.08E+00	2.05E-01	2.12E-01	3.80E-01	1.76E-01	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Bismuth-214	LANL ER-130 Modified	1.13E+00	1.78E-01	1.87E-01	8.31E-02	1.18E-01	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Potassium-40	LANL ER-130 Modified	1.32E+01	1.89E+00	2.00E+00	1.12E+00	5.04E-01	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Protactinium-231	LANL ER-130 Modified	1.15E+00	1.64E+00	1.64E+00	2.82E+00	1.35E+00	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Lead-210	LANL ER-130 Modified	2.84E+00	1.41E+00	1.41E+00	2.22E+00	1.08E+00	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Lead-212	LANL ER-130 Modified	9.74E-01	1.43E-01	1.52E-01	2.47E-01	1.21E-01	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Lead-214	LANL ER-130 Modified	1.20E+00	1.50E-01	1.62E-01	2.48E-01	1.19E-01	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Radium-226	LANL ER-130 Modified	1.13E+00	1.78E-01	1.87E-01	8.31E-02	1.18E-01	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Radium-228	LANL ER-130 Modified	1.08E+00	2.05E-01	2.12E-01	3.80E-01	1.76E-01	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Thorium-234	LANL ER-130 Modified	1.09E+00	1.46E+00	1.46E+00	1.91E+00	9.30E-01	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Thallium-208	LANL ER-130 Modified	7.01E-01	1.50E-01	1.54E-01	4.67E-02	1.91E-01	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Actinium-228	LANL ER-130 Modified	9.22E-01	2.43E-01	2.47E-01	5.07E-01	2.40E-01	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Bismuth-214	LANL ER-130 Modified	1.32E+00	2.05E-01	2.16E-01	2.42E-01	1.15E-01	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Potassium-40	LANL ER-130 Modified	1.43E+01	1.91E+00	2.05E+00	4.63E-01	1.78E-01	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Protactinium-231	LANL ER-130 Modified	1.09E+00	2.06E+00	2.06E+00	3.14E+00	1.50E+00	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Lead-210	LANL ER-130 Modified	1.59E+00	1.61E+00	1.61E+00	2.68E+00	1.31E+00	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Lead-212	LANL ER-130 Modified	1.09E+00	1.41E-01	1.51E-01	2.68E-01	1.31E-01	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Lead-214	LANL ER-130 Modified	1.38E+00	1.68E-01	1.83E-01	2.48E-01	1.19E-01	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Radium-226	LANL ER-130 Modified	1.32E+00	2.05E-01	2.16E-01	2.42E-01	1.15E-01	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Radium-228	LANL ER-130 Modified	9.22E-01	2.43E-01	2.47E-01	5.07E-01	2.40E-01	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Thorium-234	LANL ER-130 Modified	2.01E+00	1.70E+00	1.71E+00	2.83E+00	1.39E+00	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/13/2016	16-03102	Thallium-208	LANL ER-130 Modified	7.31E-01	1.77E-01	1.81E-01	4.72E-02	1.97E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample;MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original;
CV=Critical Value



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Eberline Analytical

Final Report of Analysis

Report To:

Cecilia Greene
Auxier & Associates, Inc.
9821 Cogdill Road, Suite 1
Knoxville, TN 37932

Work Order Details:

SDG:

16-03102

Purchase Order:

WESTLAKE NCC

Analysis Category:

ENVIRONMENTAL

Sample Matrix:

SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	CV	Report Units
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/8/2016	16-03102	Actinium-227	EML Th-01 Modified	1.15E-01	8.04E-02	8.16E-02	7.52E-02	1.19E-02	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/8/2016	16-03102	Actinium-227	EML Th-01 Modified	3.11E-01	1.55E-01	1.60E-01	1.26E-01	3.57E-02	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/8/2016	16-03102	Actinium-227	EML Th-01 Modified	1.95E-01	1.03E-01	1.05E-01	5.96E-02	5.60E-03	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/8/2016	16-03102	Actinium-227	EML Th-01 Modified	3.03E-01	1.45E-01	1.50E-01	7.38E-02	6.95E-03	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/8/2016	16-03102	Actinium-227	EML Th-01 Modified	2.01E-01	1.26E-01	1.28E-01	1.26E-01	3.57E-02	pCi/g
16-03102-01	LCS	KNOWN	03/22/16 00:00	3/21/2016	4/8/2016	16-03102	Thorium-228	EML Th-01 Modified	4.79E+00	1.72E-01				pCi/g
16-03102-01	LCS	SPIKE	03/22/16 00:00	3/21/2016	4/8/2016	16-03102	Thorium-228	EML Th-01 Modified	5.32E+00	8.03E-01	9.47E-01	7.41E-02	1.16E-02	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/8/2016	16-03102	Thorium-228	EML Th-01 Modified	-1.46E-02	2.64E-02	2.65E-02	8.07E-02	1.56E-02	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/8/2016	16-03102	Thorium-228	EML Th-01 Modified	1.06E+00	3.15E-01	3.30E-01	1.25E-01	3.52E-02	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/8/2016	16-03102	Thorium-228	EML Th-01 Modified	6.77E-01	2.10E-01	2.20E-01	8.84E-02	1.96E-02	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/8/2016	16-03102	Thorium-228	EML Th-01 Modified	1.08E+00	3.13E-01	3.29E-01	8.68E-02	1.15E-02	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/8/2016	16-03102	Thorium-228	EML Th-01 Modified	6.18E-01	2.29E-01	2.36E-01	1.48E-01	5.60E-02	pCi/g
16-03102-01	LCS	KNOWN	03/22/16 00:00	3/21/2016	4/8/2016	16-03102	Thorium-230	EML Th-01 Modified	5.34E+00	1.44E-01				pCi/g
16-03102-01	LCS	SPIKE	03/22/16 00:00	3/21/2016	4/8/2016	16-03102	Thorium-230	EML Th-01 Modified	6.13E+00	9.00E-01	1.18E+00	5.92E-02	6.50E-02	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/8/2016	16-03102	Thorium-230	EML Th-01 Modified	1.65E-01	9.38E-02	9.60E-02	6.44E-02	6.61E-02	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/8/2016	16-03102	Thorium-230	EML Th-01 Modified	8.36E+00	1.58E+00	1.89E+00	9.66E-02	9.07E-02	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/8/2016	16-03102	Thorium-230	EML Th-01 Modified	6.98E+00	1.22E+00	1.49E+00	6.86E-02	6.76E-02	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/8/2016	16-03102	Thorium-230	EML Th-01 Modified	4.53E+00	9.21E-01	1.08E+00	8.49E-02	8.40E-02	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/8/2016	16-03102	Thorium-230	EML Th-01 Modified	4.39E+00	9.09E-01	1.06E+00	1.13E-01	1.01E-01	pCi/g
16-03102-01	LCS	KNOWN	03/22/16 00:00	3/21/2016	4/8/2016	16-03102	Thorium-232	EML Th-01 Modified	4.79E+00	1.72E-01				pCi/g
16-03102-01	LCS	SPIKE	03/22/16 00:00	3/21/2016	4/8/2016	16-03102	Thorium-232	EML Th-01 Modified	4.78E+00	7.37E-01	8.49E-01	5.91E-02	5.48E-03	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/8/2016	16-03102	Thorium-232	EML Th-01 Modified	-4.16E-03	2.47E-02	2.47E-02	5.85E-02	5.41E-03	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/8/2016	16-03102	Thorium-232	EML Th-01 Modified	1.09E+00	3.14E-01	3.29E-01	9.18E-02	1.58E-03	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/8/2016	16-03102	Thorium-232	EML Th-01 Modified	8.19E-01	2.33E-01	2.44E-01	6.37E-02	7.42E-03	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/8/2016	16-03102	Thorium-232	EML Th-01 Modified	7.36E-01	2.42E-01	2.51E-01	9.01E-02	1.55E-03	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/8/2016	16-03102	Thorium-232	EML Th-01 Modified	8.41E-01	2.69E-01	2.79E-01	1.19E-01	3.28E-02	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original;
CV=Critical Value



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601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

Eberline Analytical Final Report of Analysis			Report To:					Work Order Details:						
			Cecilia Greene					SDG:	16-03102					
			Auxier & Associates, Inc.					Purchase Order:	WESTLAKE NCC					
			9821 Cogdill Road, Suite 1 Knoxville, TN 37932					Analysis Category:	ENVIRONMENTAL					
								Sample Matrix:	SO					
Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	CV	Report Units
16-03102-01	LCS	KNOWN	03/22/16 00:00	3/21/2016	4/11/2016	16-03102	Uranium-234	EML U-02 Modified	7.31E+00	2.63E-01				pCi/g
16-03102-01	LCS	SPIKE	03/22/16 00:00	3/21/2016	4/11/2016	16-03102	Uranium-234	EML U-02 Modified	6.27E+00	9.07E-01	1.01E+00	8.21E-02	3.18E-02	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/11/2016	16-03102	Uranium-234	EML U-02 Modified	1.01E-01	8.04E-02	8.08E-02	8.61E-02	2.12E-02	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/11/2016	16-03102	Uranium-234	EML U-02 Modified	1.17E+00	3.15E-01	3.26E-01	1.03E-01	2.54E-02	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/11/2016	16-03102	Uranium-234	EML U-02 Modified	9.48E-01	2.56E-01	2.64E-01	8.19E-02	3.14E-02	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/11/2016	16-03102	Uranium-234	EML U-02 Modified	9.34E-01	2.66E-01	2.74E-01	1.05E-01	4.23E-02	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/11/2016	16-03102	Uranium-234	EML U-02 Modified	9.29E-01	2.78E-01	2.86E-01	1.34E-01	6.03E-02	pCi/g
16-03102-01	LCS	SPIKE	03/22/16 00:00	3/21/2016	4/11/2016	16-03102	Uranium-235	EML U-02 Modified	5.13E-01	1.94E-01	1.97E-01	9.54E-02	1.14E-02	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/11/2016	16-03102	Uranium-235	EML U-02 Modified	3.54E-02	6.03E-02	6.03E-02	1.06E-01	2.21E-03	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/11/2016	16-03102	Uranium-235	EML U-02 Modified	1.27E-01	1.11E-01	1.11E-01	1.27E-01	2.65E-03	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/11/2016	16-03102	Uranium-235	EML U-02 Modified	9.53E-02	8.75E-02	8.78E-02	1.01E-01	1.21E-02	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/11/2016	16-03102	Uranium-235	EML U-02 Modified	1.14E-01	9.53E-02	9.56E-02	8.18E-02	5.14E-03	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/11/2016	16-03102	Uranium-235	EML U-02 Modified	1.55E-01	1.20E-01	1.21E-01	1.20E-01	1.43E-02	pCi/g
16-03102-01	LCS	KNOWN	03/22/16 00:00	3/21/2016	4/11/2016	16-03102	Uranium-238	EML U-02 Modified	7.08E+00	2.55E-01				pCi/g
16-03102-01	LCS	SPIKE	03/22/16 00:00	3/21/2016	4/11/2016	16-03102	Uranium-238	EML U-02 Modified	6.17E+00	8.95E-01	9.98E-01	7.70E-02	1.50E-02	pCi/g
16-03102-02	MBL	BLANK	03/22/16 00:00	3/21/2016	4/11/2016	16-03102	Uranium-238	EML U-02 Modified	6.66E-02	6.35E-02	6.37E-02	6.84E-02	1.09E-02	pCi/g
16-03102-03	DUP	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/11/2016	16-03102	Uranium-238	EML U-02 Modified	9.04E-01	2.71E-01	2.79E-01	1.13E-01	2.76E-02	pCi/g
16-03102-04	DO	SEDIMENT 2016-03-16A	03/16/16 13:35	3/21/2016	4/11/2016	16-03102	Uranium-238	EML U-02 Modified	1.11E+00	2.79E-01	2.90E-01	6.03E-02	8.56E-03	pCi/g
16-03102-05	TRG	SEDIMENT 2016-03-16B	03/16/16 13:55	3/21/2016	4/11/2016	16-03102	Uranium-238	EML U-02 Modified	9.96E-01	2.75E-01	2.84E-01	9.48E-02	6.65E-03	pCi/g
16-03102-06	TRG	SEDIMENT 2016-03-16B DUP	03/16/16 13:55	3/21/2016	4/11/2016	16-03102	Uranium-238	EML U-02 Modified	6.80E-01	2.29E-01	2.34E-01	8.19E-02	1.30E-02	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original;
CV=Critical Value



EBERLINE ANALYTICAL CORPORATION

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SECTION V
ANALYTICAL STANDARDS

QA/QC REVIEWED

Date 1/16/95 Initials WA

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTION

U-8

Radionuclide: U-238NAT
Half Life: $(4.468 \pm 0.005) \times 10^9$ years
Catalog No.: 7338
Source No.: 479-50

Customer: TMA EBERLINE
P.O.No.: OR2778
Reference Date: January 1 1995 12:00 PST.
Contained Radioactivity: (Total U) 8.016 μ Ci
Contained Radioactivity: (Total U) 297 kBq

Description of Solution

a. Mass of solution: 65.2896 g in a 50 ml flame sealed ampoule
b. Chemical form: Uranyl Nitrate in H₂O
c. Carrier content: None
d. Density: Approximately 1.3202 g/ml @ 20°C.

Radioimpurities

Refer to attached technical data sheet

Radioactive Daughters

Refer to attached technical data sheet

Radionuclide Concentration

(Total U) 0.1228 μ Ci/g.

Method of Calibration

Activity calculations are based upon known specific activity and mass.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration: $\pm 3.0\%$
b. Random uncertainty in assay: $\pm 0.0\%$
c. Random uncertainty in weighing(s): $\pm 2.0\%$
d. Total uncertainty at the 99% confidence level: $\pm 3.6\%$

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).



ISOTOPE PRODUCTS LABORATORIES
3017 N. SAN FERNANDO BLVD.
BURBANK, CALIFORNIA 91504
818-843-7000 FAX 818-843-6168

ERIC ALLAS
QUALITY CONTROL

20 DECEMBER 1994

Date Signed



QUALITY CONTROL PROGRAM
MP-009

Rev.8; 11/01/03

Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
MP 009

SOLUTION REFERENCE # IPL 479-50 CURRENT DATE 10/1/2015 0:00
SOLUTION # U-8

Principal Radionuclide ^{234, 235, 238}U Half Life, Years 4.468E+09 Half Life, Days 1.632E+12

Radionuclide ^{234, 235, 238}U Reference Date 1/1/1995 0:00
Certified Activity 8.016E+00 μCi
Certified Concentration $\mu\text{Ci per gram}$

Ampoule /Solution Gross	<u>97.6400</u>	Weight, Grams
Empty Ampoule	<u>32.5020</u>	Weight, Grams
Solution Net	<u>65.1380</u>	Weight, Grams
Total Activity in Ampoule	<u>8.0160</u>	μCi

Chemical Composition of Standard Solution

Uranyl nitrate in dilute HNO_3

Dilution Instructions:

Dilution Solvent Used

1M HNO_3

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 8.0160 μCi Which Equals 1.780E+07 dpm at the date listed above

And after dilution the activity of this solution is 1.77955E+04 dpm/ml
This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: July 27, 2016

Verified & Approved By

Date: 10/1/2015 0:00

QC Approval

Date: 10/1/15



QUALITY CONTROL PROGRAM
MP-009

Rev.8; 11/01/03

Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

Solution Reference #		MP-009	Date	10/1/2015 0:00
Solution #		IRL-479-50	Solution #	U-8a
Principal Radionuclide	Half Life, Years	Half Life, Days		
234, 235, 238 U	4.468E+09	1.632E+12		
Radionuclide of Interest	Reference Date			
234, 235, 238 U	1/1/1995 0:00			
Parent Solution Conc.	1.7796E+04 dpm/ml			
Chemical Composition of Standard Solution				
Uranily Nitrate in 1M HNO ₃				

Dilution Instructions:

Dilution Solvent Used

1M HNO₃

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 4.0000 ml

Total Activity: 7.1182E+04 dpm

Final Volume: 1000.00 ml

Final Activity Concentration: 7.1182E+01 dpm/ml

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Isotopic Distribution as:
U-238 Atom % = 48.239 U-238 = 71.182 dpm/ml X 0.48249 = 34.345 dpm/ml
U-235 Atom % = 2.25 U-235 = 71.182 dpm/ml X 0.0225 = 1.602 dpm/ml
U-234 Atom % = 49.501 U-234 = 71.182 dpm/ml X 0.49501 = 35.236 dpm/ml
All values +/- 3.6%

Isotopic ratios from manufacturer's data sheet

Expiration Date: July 27, 2016

Verified & Approved By

QC Approval

Date: 10/1/2015 0:00

Date: 10/1/15

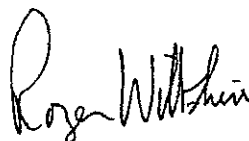
RECORD COPY

Tracer Solution for Environmental Analysis & Disequilibrium Studies

Product Description & Measurement Certificate

<i>Description</i>	Principal radionuclide: uranium 232 (U-232) Daughter Nuclide: Th-228	Product code: UDP10050 Batch Number: 92/232/67
<i>Measurement</i>	Reference date: Radioactive concentration U-232 which is equivalent to Mass of solution Volume of solution Total activity of U-232 which is equivalent to	01 March 2000 6.739E+03 becquerels per gram of solution 1.821E-01 microcuries per gram of solution 5.356 grams 5.035 millilitres 3.61E+04 becquerels 9.76E-01 microcuries
<i>Accuracy</i>	Method of measurement (see reverse of this certificate) Random uncertainty is: $\pm 0.7\%$ Systematic uncertainty: $\pm 0.5\%$ Overall uncertainty in the radioactive concentration quoted above: $\pm 1.7\%$ Overall uncertainty is defined on the reverse of this certificate.	
<i>Radionuclidic Purity</i>	Any radioactive impurities measured are listed below, expressed as percentages of the activity of the principle radionuclide at the reference date. Th-228 and daughter activity removed 2 Feb 2000 U-232 daughters activity will increase with time. By alpha 88% U-232, 12% daughters on 1/3/00	
<i>Isotopic Purity</i>	The isotopic composition, expressed as atom per cent at the reference date. Not measured	
<i>Chemical Composition</i>	Calculated weight of U-232, 4.42E-08 grams, as 2M HNO ₃ solution in a flame sealed glass vial. This Tracer solution has been produced 'carrier free'.	
<i>Physical Data</i>	Recommended half life of uranium 232: 6.980E+01 years Principle energies of alpha emissions (MeV): 5.263 31.7%, 5.320 68.0% Branching ratio for alpha emission: 100% Calculated specific activity of uranium 232: 8.167E+05 Bq per microgram U-232.	
<i>Remarks</i>	For safety information and notes to ensure correct usage by all persons handling this radioactive Tracer solution please read the instructions accompanying the package. AEA Technology operates a quality management system which has been independently audited and approved to ISO 9001.	

Approved
Signatory



Roger Wiltshire

Project Ref. AE2315

Prepared and characterised in the UK, for world wide distribution by Isotrak, AEA Technology, QSA.



QUALITY CONTROL PROGRAM

MP-009

Rev.8; 11/01/03

Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY RADIOACTIVE REFERENCE SOLUTIONS PRIMARY DILUTION RECERTIFICATION MP 009

SOLUTION REFERENCE # AEA/Amersham 92/232/67

CURRENT DATE 10/27/2015 0:00

SOLUTION # U-10

Principal Radionuclide

Half Life, Years

Half Life, Days

^{232}U

7.200E+01

2.630E+04

Radionuclide

^{232}U

Reference Date

3/1/2000 0:00

Certified Activity 9.760E-01 μCi

Certified Concentration μCi per gram

Ampoule /Solution Gross

Weight, Grams

Empty Ampoule

Weight, Grams

Solution Net

Weight, Grams

Total Activity in Ampoule 0.9760 μCi

Chemical Composition of Standard Solution

$^{232}\text{U}(\text{NO}_3)_6$ in 2M HNO_3

Dilution Instructions:

Dilution Solvent Used

2M HNO_3

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 0.9760 μCi

Which Equals 2.167E+06 dpm at the date listed above

And after dilution the activity of this solution is 2.167E+03 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: October 26, 2016

Verified & Approved By

Date: 10/27/2015 0:00

QC Approval

Date: 10/28/15



QUALITY CONTROL PROGRAM
MP-009

Rev.8; 11/01/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

Solution Reference #		MP-009	Date	10/27/2015 0:00
Solution Reference #		AEA/Amersham 92/232/67	Solution #	U-10a
Principal Radionuclide	Half Life, Years	Half Life, Days		
^{232}U	7.200E+01	2.630E+04		
Radionuclide of Interest	Reference Date			
^{232}U	3/1/2000 0:00			
Parent Solution Conc.	2.167E+03 dpm/ml			
Chemical Composition of Standard Solution				
$^{232}\text{U}(\text{NO}_3)_6$ in 2M HNO_3				

Dilution Instructions:

Dilution Solvent Used

2M HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 10.0000 ml

Total Activity: 2.1670E+04 dpm

Final Volume: 1000.00 ml

Final Activity Concentration: 2.1670E+01 dpm/ml

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: October 26, 2016

Verified & Approved By

Date: 10/27/2015 0:00

QC Approval

Date: 10/28/15

QA/QC REVIEWED

Date

10/14/91

Initials

ut

CERTIFICATE OF CALIBRATION
ALPHA STANDARD SOLUTIONReceived
OCT 14 1991
TMA/Eberline
Oak Ridge Lab

Radionuclide Th-230
Half Life: $(7.54 \pm 0.03) \times 10^4$ years
Catalog No.: 7230
Source No.: 388-116

Customer: TMA EBERLINE
P.O.No.: TT4944
Reference Date: November 1 1991 12:00 PST.
Contained Radioactivity: 1.036 μ Ci.

Description of Solution

a. Mass of solution: 5.0042 grams.
b. Chemical form: Th(NO₃)₄ in 0.1N HNO₃
c. Carrier content: None added
d. Density: 1.0016 gram/ml @ 20°C.

Radioimpurities

See attached technical data sheet

Radioactive Daughters

See attached technical data sheet

Radionuclide Concentration

0.207 μ Ci/gram.

Method of Calibration

Weighed aliquots of the solution were assayed using a liquid scintillation counter.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration: $\pm 2.0\%$
b. Random uncertainty in assay: $\pm 0.5\%$
c. Random uncertainty in weighing(s): $\pm 0.2\%$
d. Total uncertainty at the 99% confidence level: $\pm 2.7\%$

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Notes

1. Nuclear data were taken from "Table of Isotopes", Seventh Edition, edited by Virginia S. Shirley.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials. (As in NRC Regulatory Guide 4.15)



ISOTOPE PRODUCTS LABORATORIES
1800 No. Keystone Street.,
Burbank, California 91504
(818) 843 - 7000

[Signature]
QUALITY CONTROL



QUALITY CONTROL PROGRAM

MP-009

Rev.14; 10/10/2012

Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
MP 009

SOLUTION REFERENCE # IPL 388-116

CURRENT DATE 3/5/2016 0:00

SOLUTION # Th-1

Principal Radionuclide

Half Life, Years

Half Life, Days

²³⁰Th

7.540E+04

2.754E+07

Radionuclide ²³⁰Thorium

Reference Date 11/1/1991 0:00

Certified Activity 1.036E+00 μ CiCertified Concentration μ Ci per gram

Ampoule /Solution Gross 9.2660 Weight, Grams

Empty Ampoule 4.6218 Weight, Grams

Solution Net 4.6442 Weight, Grams

Total Activity in Ampoule 1.0360 μ Ci

Chemical Composition of Standard Solution

²³⁰Th(NO₃)₄ in 0.1N HNO₃

Dilution Instructions:

Dilution Solvent Used

0.1N HNO₃

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 1.0360 μ Ci

Which Equals 2.300E+06 dpm at the date listed above

And after dilution the activity of this solution is 2.300E+03 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: February 8, 2017

Recertified By

Date: 3/5/2016 0:00

QC Approval

Date: 3/10/16

: 00029



QUALITY CONTROL PROGRAM
MP-009

Rev.14; 10/10/2012
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

MP-009		Date	3/5/2016 0:00
Solution Reference #	IPL 388-116	Solution #	Th-1b
Principal Radionuclide	Half Life, Years	Half Life, Days	
^{230}Th	7.540E+04	2.754E+07	

Radionuclide of Interest $^{230}\text{Thorium}$
Parent Solution Conc. 2.30E+03 dpm/ml

Reference Date 11/1/1991 0:00

Chemical Composition of Standard Solution

$^{230}\text{Th}(\text{NO}_3)_4$ in 0.1N HNO_3

Dilution Instructions:

Dilution Solvent Used

0.1N HNO_3

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 10.0000 ml
Total Activity: 2.2999E+04 dpm
Final Volume: 1000.00 ml

Final Activity Concentration: 2.2999E+01 dpm/ml

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: February 8, 2017

Recertified By

Date: 3/5/2016 0:00

QC Approval

Date: 3/10/16

CERTIFICATE OF CALIBRATION ALPHA STANDARD SOLUTION

Radionuclide:	Th-232	Customer:	TMA EBERLINE
Half Life:	$(1.405 \pm 0.006) \times 10^{10}$ years	P.O.No.:	VH1632
Catalog No.:	7232	Reference Date:	November 1 1993 12:00 PST.
Source No.:	435-104-2	Contained Radioactivity:	(Th-232) 0.0933 μ Ci.
		Contained Radioactivity:	(Th-232) 3.45 kBq.

Description of Solution

a. Mass of solution:	11.9712 g (in a 10 ml flame sealed ampoule)
b. Chemical form:	Th(NO ₃) ₄ in water
c. Carrier content:	None added
d. Density:	Approx. 1.21 g/ml @ 20°C.

Radioimpurities: None detected (other than daughters).

Radioactive Daughters

Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Po-212, Tl-208

Radionuclide Concentration

(Th-232) 0.00779 μ Ci/g.

Method of Calibration

Activity calculations are based upon known specific activity and mass.

Uncertainty of Measurement

a. Systematic uncertainty in instrument calibration:	±3.0%
b. Random uncertainty in assay:	±0.0%
c. Random uncertainty in weighing(s):	±2.0%
d. Total uncertainty at the 99% confidence level:	±3.6%

NIST Traceability

This calibration is implicitly traceable to the National Institute of Standards and Technology.

Leak Test(s)

See reverse side for Leak Test(s) applied to this source.

Notes

1. Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia S. Shirley, 1986.
2. IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).



ISOPE PRODUCTS LABORATORIES
1800 North Keystone Street
Burbank, California 91504
(818) 843 - 7000

Anna U. Khan
QUALITY CONTROL

Nov. 8, 1993
Date Signed



QUALITY CONTROL PROGRAM
MP-009

Rev.8; 1/10/03

Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
MP 009

SOLUTION REFERENCE #		IPL 435-104-2	CURRENT DATE	9/29/2015 0:00
SOLUTION #		Th-8		
Principal Radionuclide	Half Life, Years	Half Life, Days		
²³² Th, ²²⁸ Th	1.405E+10	5.132E+12		
Radionuclide	²³² & ²²⁸ Th	Reference Date	11/1/1993 0:00	
Certified Activity	9.330E-02 μ Ci			
Certified Concentration	μ Ci per gram			
Ampoule /Solution Gross	18.8415	Weight, Grams		
Empty Ampoule	6.9296	Weight, Grams		
Solution Net	11.9119	Weight, Grams		
Total Activity in Ampoule	0.0933	μ Ci		
Chemical Composition of Standard Solution				
Th(NO ₃) ₄ in H ₂ O				

Dilution Instructions: Dilution Solvent Used 1% Nitric Acid

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 0.0933 μ Ci Which Equals 2.071E+05 dpm at the date listed above

And after dilution the activity of this solution is 2.071E+02 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: August 25, 2016

Verified & Approved By

Date: 9/29/2015 0:00

QC Approval

Date: 9/30/15



QUALITY CONTROL PROGRAM
MP-009

Rev.8; 1/10/03

Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION

MP-009		Date	9/29/2015 0:00
Solution Reference #	IPL 435-104-2	Solution #	Th-8b
Principal Radionuclide	Half Life, Years	Half Life, Days	
²²⁸ & ²³² Th	1.405E+10	5.132E+12	

Radionuclide of Interest	²²⁸ & ²³² Th	Reference Date	11/1/1993 0:00
Parent Solution Conc.	2.07E+02 dpm/ml		

Chemical Composition of Standard Solution

Th(NO₃)₄ in 1% HNO₃

Dilution Instructions:

Dilution Solvent Used

1% Nitric Acid

SECONDARY VOLUMETRIC DILUTION

Vol. Parent Solution: 500.0000 ml
Total Activity: 1.0355E+05 dpm
Final Volume: 1000.00 ml

Final Activity Concentration: 1.0355E+02 dpm/ml

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: August 25, 2016

Verified & Approved By

Date: 9/29/2015 0:00

QC Approval

Date: 9/30/15



Isotope Products Laboratories

An Eckert & Ziegler Company

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661•309•1010
Fax 661•257•8303

Th-18

CERTIFICATE OF CALIBRATION ALPHA STANDARD SOLUTION

Radionuclide:	Th-229	Customer:	EBERLINE SERVICES		
Half-life:	7340 ± 160 years	P.O. No.:	00009633		
Catalog No.:	7229	Reference Date:	15-Jan-02	12:00	PST
Source No.:	867-54	Contained Radioactivity:	1.013	μCi	37.48 kBq
		(Th-229 only)			

Physical Description:

A. Mass of solution:	5.0147 g in 5 mL flame-sealed ampoule
B. Chemical form:	Th(NO ₃) ₄ in 0.1M HNO ₃
C. Carrier content:	10μg Th/mL
D. Density:	1.0016 g/mL @ 20°C.

Radioimpurities:

None detected (daughters in equilibrium)

Radionuclide Concentration: 0.2020 μCi/g, 7.474 kBq/g

Method of Calibration:

This source was prepared from a weighed aliquot of solution whose activity in μCi/g was determined using gamma ray spectrometry.

Peak energy used for integration:	193.5 keV
Branching ratio used:	0.0441 gammas per decay

Uncertainty of Measurement:

A. Type A (random) uncertainty:	± 0.7 %
B. Type B (systematic) uncertainty:	± 3.0 %
C. Uncertainty in aliquot weighing:	± 0.0 %
D. Total uncertainty at the 99% confidence level:	± 3.1 %

Notes:

- See reverse side for leak test(s) performed on this source.
- IPL participates in a NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).
- Nuclear data was taken from IAEA Technical Report Series No. 261.
- This solution has a working life of 5 years.

Quality Control

9-Jan-02
Date Signed

IPL Ref. No.: 867-54

ISO 9001 CERTIFIED

Medical Imaging Laboratory
24937 Avenue Tibbitts Valencia, California 91355

Industrial Gauging Laboratory
1800 North Keystone Street Burbank, California 91504

: 00034



QUALITY CONTROL PROGRAM
MP-009

Rev. 8; 1/10/03
Title: Radioactive Reference Standards Solutions & Records

EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE SOLUTIONS
PRIMARY DILUTION RECERTIFICATION
MP 009

SOLUTION REFERENCE #		IPL 867-54	CURRENT DATE	9/29/2015 0:00
SOLUTION #		Th-18		
Principal Radionuclide	Half Life, Years	Half Life, Days		
²²⁹ Th	7.340E+03	2.681E+06		
Radionuclide	²²⁹ Th	Reference Date	1/15/2002 0:00	
Certified Activity	1.013E+00 μ Ci			
Certified Concentration	μ Ci per gram			
Ampoule /Solution Gross	8.7752	Weight, Grams		
Empty Ampoule	3.7591	Weight, Grams		
Solution Net	5.0161	Weight, Grams		
Total Activity in Ampoule	1.0130	μ Ci		
Chemical Composition of Standard Solution				
²²⁹ Th(NO ₃) ₄ in 0.1M HNO ₃				

Dilution Instructions:

Dilution Solvent Used

0.1 M HNO₃

Dilute to a volume of 1000.00 milliliters

Certified Total Activity of 1.0130 μ Ci

Which Equals

2.249E+06 dpm at the date listed above

And after dilution the activity of this solution is 2.249E+03 dpm/ml

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: August 24, 2016

Verified & Approved By

Date: 9/29/2015 0:00

QC Approval

Date: 9/30/15

**QUALITY CONTROL PROGRAM**

MP-009

Rev.7: 9/29/99

Title: Radioactive Reference Standards Solutions & Records

**EBERLINE SERVICES - OAK RIDGE LABORATORY
RADIOACTIVE REFERENCE STANDARD SOLUTIONS
SECONDARY DILUTION RECERTIFICATION**

Solution Reference #		MP-009	Date	9/29/2015 0:00
IPL 867-54		Solution #	Th-18a	
Principal Radionuclide	Half Life, Years	Half Life, Days		
^{229}Th	7.340E+03	2.681E+06		
Radionuclide of Interest	Reference Date			
^{229}Th	1/15/2002 0:00			
Parent Solution Conc.	2.25E+03 dpm/ml			
Chemical Composition of Standard Solution				
TH(NO ₃) ₄ in 0.1M HNO ₃				

Dilution Instructions:

Dilution Solvent Used

0.1M HNO₃**SECONDARY VOLUMETRIC DILUTION**

Vol. Parent Solution: 10.0000 ml

Total Activity: 2.2490E+04 dpm

Final Volume: 1000.00 ml

Final Activity Concentration: 2.2490E+01 dpm/ml

NOTES:

This activity concentration is based on the original reference date listed above. All activities are corrected to the date and time of analysis by the laboratory data processing software.

Expiration Date: August 24, 2016

Verified & Approved By

Date: 9/29/2015 0:00

QC Approval

Date: 9/30/15

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

GAS-1402

98503

Sand in 16 Ounce PP Taral Jar Filled to Capacity

Customer: Eberline Analytical Corporation
P.O. No.: OR-1405030, Item 6 **Product Code:** 8401-EG-SAN
Reference Date: 01-Oct-2014 12:00 PM EST **Grams of Master Source:** 0.017608

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Additional radionuclides were added gravimetrically from solutions calibrated by gamma-ray spectrometry, ionization chamber, or liquid scintillation counting. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* yps/gram	This Source yps	Uncertainty*, %			Calibration Method*
					Type	u _A	u _B	U
Am-241	59.5	1.580E+05	—	2.030E+03	0.1	1.8	3.6	4π LS
Cd-109	88.0	4.614E+02	1.663E+05	2.929E+03	0.5	2.0	4.1	HPGe
Co-57	122.1	2.717E+02	8.913E+04	1.569E+03	0.4	1.7	3.5	HPGe
Ce-139	165.9	1.376E+02	1.241E+05	2.185E+03	0.4	1.7	3.5	HPGe
Hg-203	279.2	4.659E+01	2.675E+05	4.710E+03	0.3	1.7	3.5	HPGe
Sn-113	391.7	1.151E+02	1.796E+05	3.163E+03	0.4	1.9	3.9	HPGe
Cs-137	661.7	1.099E+04	1.111E+05	1.956E+03	0.7	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.223E+05	7.435E+03	0.7	1.7	3.7	HPGe
Co-60	1173.2	1.925E+03	2.091E+05	3.683E+03	0.7	1.8	3.9	HPGe
Co-60	1332.5	1.925E+03	2.094E+05	3.687E+03	0.7	1.8	3.9	HPGe
Y-88	1836.1	1.066E+02	4.471E+05	7.872E+03	0.7	1.7	3.7	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)



SECTION VI
QUALITY CONTROL SAMPLE RESULTS SUMMARY

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-03102	UISO	1	pCi	g	Auxier & Associates, Inc.

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
U-234		85.77%	16.14%	100.00%	3.60%	7.31E+00	2.63E-01	6.27E+00	1.01E+00	U-8a	3.20E+01	3.60E+00	5.07E-01
U-238		87.23%	16.17%	100.00%	3.60%	7.08E+00	2.55E-01	6.17E+00	9.98E-01	U-8a	3.10E+01	3.60E+00	5.07E-01

Matrix Spike

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

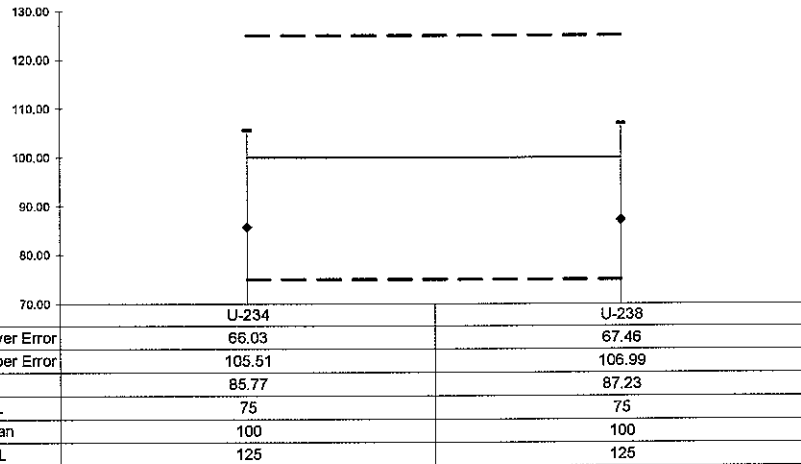
Replicate Sample

QC Summary

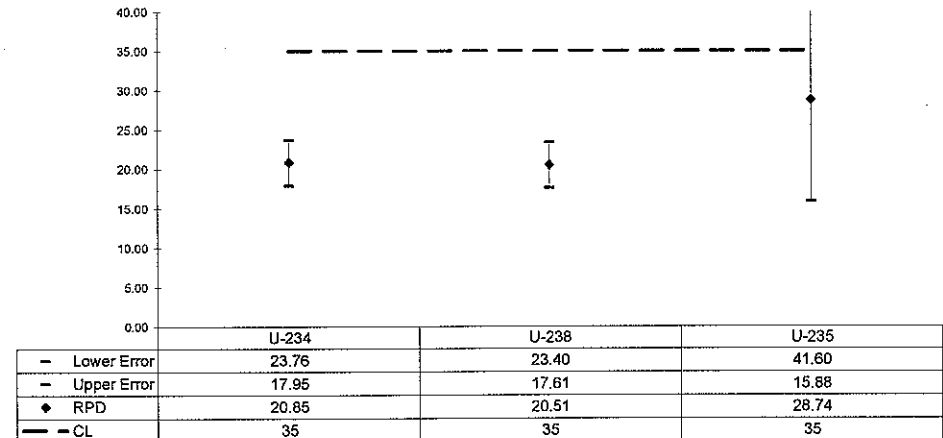
Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R		MS % R	MS ND	Rep RPD	Rep ND
U-234	1.03	20.85	9.48E-01	2.64E-01	1.17E+00	3.26E-01	0.86	OK				OK	OK
U-238	1.01	20.51	1.11E+00	2.90E-01	9.04E-01	2.79E-01	0.87	OK				OK	OK
U-235	0.44	28.74	9.53E-02	8.78E-02	1.27E-01	1.11E-01		OK				NA	OK

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-03102	UUISO	1	pCi	g	Auxier & Associates, Inc.

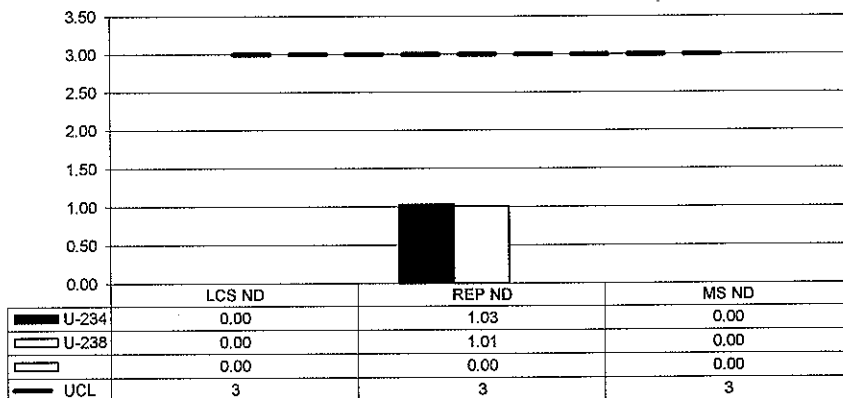
LCS % Recovery



Replicate Sample RPD



Normalized Difference



No Matrix Spike

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-03102	ThISO	1	pCi	g	Auxier & Associates, Inc.

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
TH-228		111.25%	17.78%	100.00%	3.60%	4.79E+00	1.72E-01	5.32E+00	9.47E-01	Th-8b	1.04E+02	3.60E+00	1.03E-01
TH-230		114.86%	19.19%	100.00%	2.70%	5.34E+00	1.44E-01	6.13E+00	1.18E+00	Th-1b	2.35E+01	2.70E+00	5.04E-01
TH-232		99.90%	17.75%	100.00%	3.60%	4.79E+00	1.72E-01	4.78E+00	8.49E-01	Th-8b	1.04E+02	3.60E+00	1.03E-01

Matrix Spike

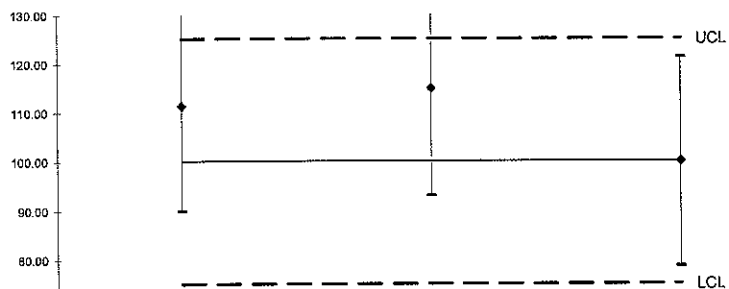
Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

Replicate Sample**QC Summary**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R		MS % R	MS ND	Rep RPD	Rep ND
TH-228	1.90	44.32	6.77E-01	2.20E-01	1.06E+00	3.30E-01	1.11	OK				NA	OK
TH-230	1.12	17.90	6.98E+00	1.49E+00	8.36E+00	1.89E+00	1.15	OK				OK	OK
TH-232	1.28	28.08	8.19E-01	2.44E-01	1.09E+00	3.29E-01	1.00	OK				INV	OK

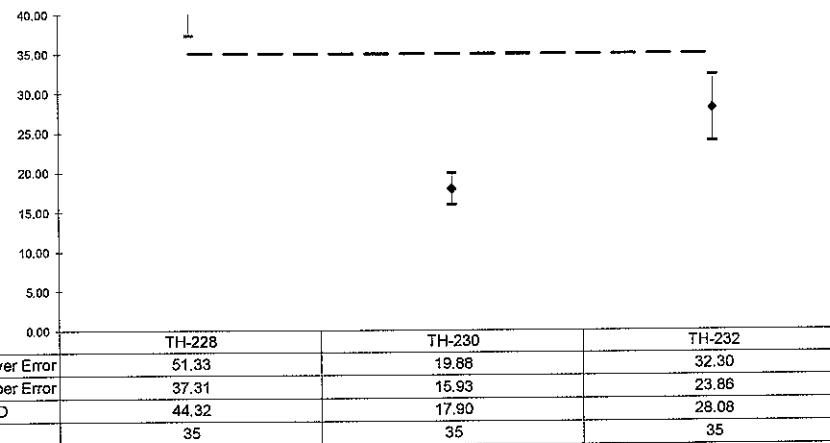
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-03102	ThISO	1	pCi	g	Auxier & Associates, Inc.

LCS % Recovery



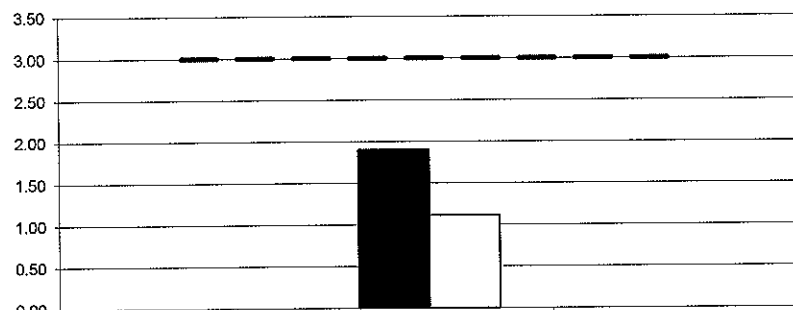
	TH-228	TH-230	TH-232
- Lower Error	89.87	92.96	78.56
- Upper Error	132.62	136.75	121.25
◆ %R	111.25	114.86	99.90
- - LCL	75	75	75
- - Mean	100	100	100
- - UCL	125	125	125

Replicate Sample RPD



	TH-228	TH-230	TH-232
- Lower Error	51.33	19.88	32.30
- Upper Error	37.31	15.93	23.86
◆ RPD	44.32	17.90	28.08
- - CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
■ TH-228	0.00	1.90	0.00
□ TH-230	0.00	1.12	0.00
- - UCL	3	3	3

No Matrix Spike

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-03102	Gamma	1	pCi	g	Auxier & Associates, Inc.

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
CO-60		100.71%	7.63%	100.00%	4.00%	1.37E+02	5.48E+00	1.38E+02	1.05E+01	GAS-1302	1.37E+02	5.48E+00	7.36E+02
CS-137		102.15%	9.66%	100.00%	4.00%	8.69E+01	3.48E+00	8.88E+01	8.58E+00	GAS-1302	8.69E+01	3.48E+00	7.36E+02

Matrix Spike

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

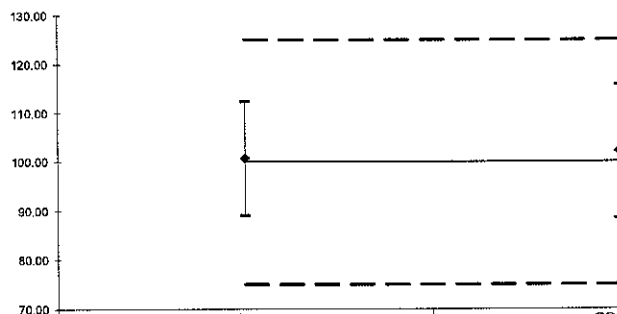
Replicate Sample

QC Summary

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R		MS % R	MS ND	Rep RPD	Rep ND
BI-214	0.88	8.92	1.70E+00	2.45E-01	1.86E+00	2.53E-01	1.01	OK		<CS-137	BI-214>	OK	
K-40	0.59	6.37	1.59E+01	2.36E+00	1.69E+01	2.55E+00	1.02	OK		<CO-60	K-40>	OK	OK
PB-214	0.27	2.77	1.86E+00	2.60E-01	1.81E+00	2.58E-01					PB-214>	OK	OK

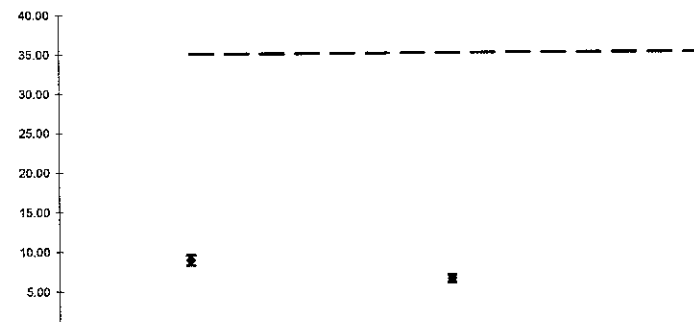
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
16-03102	Gamma	1	pCi	g	Auxier & Associates, Inc.

LCS % Recovery



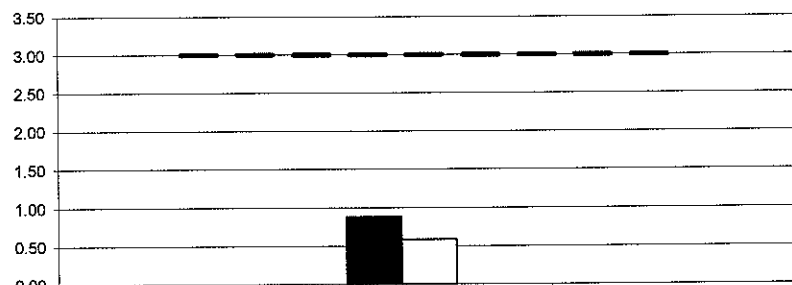
	CO-60	CS-137
- Lower Error	89.08	88.49
- Upper Error	112.33	115.81
♦ %R	100.71	102.15
- LCL	75	75
- Mean	100	100
- UCL	125	125

Replicate Sample RPD



	BI-214	K-40	PB-214
- Lower Error	9.55	6.85	2.97
- Upper Error	8.30	5.89	2.58
♦ RPD	8.92	6.37	2.77
- CL	35	35	35

Normalized Difference




	LCS ND	REP ND	MS ND
CO-60	0.00	0.88	0.00
CS-137	0.00	0.59	0.00
MS ND	0.00	0.00	0.00
- UCL	3	3	3

No Matrix Spike

SECTION VII
LABORATORY TECHNICIAN'S NOTES
& RUN LOGS

ISO U NOTES

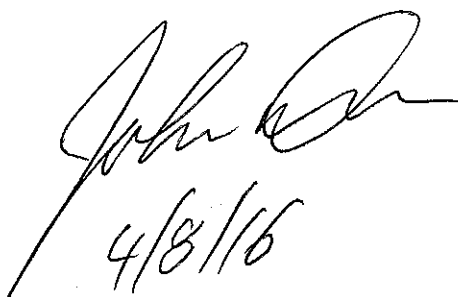
 EBERLINE SERVICES Work Order Analysis Notes	Oak Ridge Laboratory 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	16-03102
		Analysis Code	UUISO
		Run Number	1

#	Date	Dept	User	Notes
1	04/05/16 11:27	PREP	JWOLFE	ALIUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- SUBMITTED SAMPLES TO SEPARATIONS

JWOLFE
4/5/16

 EBERLINE SERVICES Work Order Analysis Notes	Oak Ridge Laboratory 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	16-03102
		Analysis Code	UUISO
		Run Number	1


#	Date	Dept	User	Notes
1	04/05/16 11:27	PREP	JWOLFE	ALIUQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- SUBMITTED SAMPLES TO SEPARATIONS
2	04/08/16 17:12	CHEM	JDEMELAS	Added concentrated HCl to sample beakers and heated to dryness; Added 20 ml 8N HCL to samples and transferred to new, labeled C-Tubes, rinsing with 8N HCl to bring volume to ~35 ml; Preconditioned resin columns with 35 ml 8N HCl; Centrifuged samples and loaded onto columns; Rinsed C-Tubes with 20 ml 8N HCl, centrifuged as needed and loaded onto columns; Rinsed columns with 35 ml 8N HCl – 0.1N NH4I, 35 ml of 6.5N HCl – 0.04N HF, and 10 ml of 6.5N HCl; Eluted Uranium with 50 ml of 0.5N HCl into clean, labeled 100-ml beakers; Dried-down samples on hotplate; Dissolved samples in ~10 ml of concentrated HCl; Transferred to new, labeled C-Tubes with DI H2O. Set samples aside for later precipitation and filtering.


4/8/16

 EBERLINE SERVICES Work Order Analysis Notes	Oak Ridge Laboratory 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	16-03102
		Analysis Code	UUISO
		Run Number	1

#	Date	Dept	User	Notes
1	04/05/16 11:27	PREP	JWOLFE	ALIUQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- SUBMITTED SAMPLES TO SEPARATIONS
2	04/08/16 17:12	CHEM	JDEMELAS	Added concentrated HCl to sample beakers and heated to dryness; Added 20 ml 8N HCL to samples and transferred to new, labeled C-Tubes, rinsing with 8N HCl to bring volume to ~35 ml; Preconditioned resin columns with 35 ml 8N HCl; Centrifuged samples and loaded onto columns; Rinsed C-Tubes with 20 ml 8N HCl, centrifuged as needed and loaded onto columns; Rinsed columns with 35 ml 8N HCl – 0.1N NH4I, 35 ml of 6.5N HCl – 0.04N HF, and 10 ml of 6.5N HCl; Eluted Uranium with 50 ml of 0.5N HCl into clean, labeled 100 ml beakers; Dried-down samples on hotplate; Dissolved samples in ~10 ml of concentrated HCl; Transferred to new, labeled C-Tubes with DI H2O. Set samples aside for later precipitation and filtering.
3	04/11/16 05:23	CHEM	TSMITH	Followed steps 12.1.7 to 12.4.5 in AP-005 . (Precipitated and filtered samples for Uranium)

4-11-16
mm

 EBERLINE SERVICES		Internal Work Order		
		16-03102		
		Analysis Code		Run
		UUISO		1
Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
017047P	Hydrofluoric Acid	Reagent Grade	JWOLFE	4/5/2016
017152P	Nitric Acid	Reagent Grade	JWOLFE	4/5/2016
017361P	Perchloric Acid	Reagent Grade	JWOLFE	4/5/2016
016679P	Sulfuric Acid	Reagent Grade	JWOLFE	4/5/2016
017230P	Anion Exchange Resin	Reagent Grade	JDEMELAS	4/8/2016
017477S	HCl - NH4I	8N - 0.1M	JDEMELAS	4/8/2016
017371D06	Hydrochloric Acid	0.5N	JDEMELAS	4/8/2016
017414S	Hydrochloric Acid	6.5N	JDEMELAS	4/8/2016
017476S	Hydrochloric Acid	8N	JDEMELAS	4/8/2016
017371P	Hydrochloric Acid	Reagent Grade	JDEMELAS	4/8/2016
017468S	HCl - HF	6.5N - 0.04N	JDEMELAS	4/8/2016
017437S	Carbon substrate	Solution	TSMITH	4/11/2016
017047P	Hydrofluoric Acid	Reagent Grade	TSMITH	4/11/2016
016973S	Neodymium Carrier	1 mg/ml	TSMITH	4/11/2016
017408P	Reagent Alcohol	Reagent Grade	TSMITH	4/11/2016
016606P	Titanous Chloride	Reagent Grade	TSMITH	4/11/2016

Alpha #1

3


Date	Sample #	Client	Trade #	Chase	Analysis	Deal
3/31/16	1603051A(5-11)	Auxen	1132	2hr50-	UU	KB
4/1/16	Daily Pulse	IAS	0457	1-	NA	-
4/1/16	SECAL(7-15)	IAS	1118	2hr	NA	-
4/1/16	1603082A(1-4)	UCOR	0818	2hr5-	Am 24	-
4/1/16	1603082A(1-7)	UCOR	0818	2hr5-	Am 24	-
4/1/16	1603089A(1-7)	Account	1354	2hr50-	Rak	KB
4/1/16	System B Kgd	Lab	1714	16:40 hrs	2	KB
4/1	Daily Pulse	IAS	0456	1-	NA	-
4/1	1603070A(1-7)	Auxen	0806	2hr5-	UWISO	-
4/1	1603082A(3-4)	UCOR	1207	2hr50-	Pu 242	KB
4/1/16	1603083A(1-4)	UCOR	1208	2hr50-	Pu 242	KB
4/1	Daily Pulse	IAS	0517	1-	NA	-
4/1	1603085A(1-7)	Rep. Serv.	0823	2hr5-	Th 250	-
4/1/16	1603088A(1-7)	UCOR	1117	2hr50-	ISO-Pu	KB
4/1/16	1603088A(1-2)	UCOR	1118	2hr50-	NP	KB
4/1/16	Daily Pulse	IAS	0510	1-	NA	-
4/1/16	1604005A(1-5)	United	0750	2hr5-	UWISO	-
4/1/16	1603071B(1-2)	Ust	0751	2hr5-	UWISO	-
4/1	Daily Pulse	IAS	0522	1-	NA	-
4/1	1604017A(1-4)	UCOR	0800	2hr5-	UWISO	-
4/1	1603096A(1-7)	Rep. Serv.	0801	2hr5-	UWISO	-
4/1	Daily Pulse	IAS	0454	1-	NA	-
4/1	SECAL(7-15)	IAS	1147	2hr5-	NA	-
4/1	1604027A(1-4)	UCOR	0849	2hr5-	UWISO	-
4/1	1604018A(1-7)	UCOR	0850	2hr5-	Am 24	-
4/1/16	1603100A(6-12)	Republic Services	1422	2hr50-	ISO-Th	KB
4/1/16	System B Kgd	Lab	1740	16:40 hrs	2	KB
4/1/1	Daily Pulse	IAS	0509	1-	NA	-
4/1/1	1603126A(1-4)	UCOR	0837	2hr5-	Am 24	-
4/1/1	1603126A(1-3)	UCOR	0838	2hr5-	Am 24	-
4/1/1/16	1603102A(4-6)	Auxen	1131	2hr50-	UU	KB
4/1/1/16	1604019A(1-4)	UCOR	1132	2hr50-	Th 229	KB

Alpha #7

73


Date	Sample #	Client	Function	CPTM	Analysis	Test
4/2	1604018A(4)	ucon	0850	245	Amu	-
4/2	1604018A(1-4)	ucon	0850	245	Amu	-
4/2	1604018A(1-4.7)	ucon	0851	245	Pu250	-
4/2	1604018A(1-4)	ucon	0851	245	Pu242	-
4/2	1604018A(1-2)	ucon	0852	245	u2750	-
4/8/16	1604018A(3-4)	ucon	1018	2450-	u2	KB
4/8/16	1604018A(1-4)	ucon	1019	2450-	Np	KB
4/8/16	1604018A(1-4)	ucon	1020	2450-	ISO-Th	KB
4/8/16	16030916A(1-14)	Republic Services	1149	2450-	Rate	KB
4/8/16	16030916A(1-14)	Republic Services	1149	2450-	Rate	KB
4/8/16	1604033A(1-2)	ucon	1149	2450-	u2	KB
4/8	1603076A(15-19)	Rep. Serv.	1215	245-	Rate	-
4/8	1603100A(1-5)	Rep. Serv.	1216	245-	Th250	-
4/8/16	1603100A(1-3)	Republic Services	1444	2450-	ISO-Th	KB
4/8/16	1603102A(1-6)	Aurien	1445	2450-	ISO-Th	KB
4/8/16	1603100A(1-9)	Republic Services	1446	2450-	u2	KB
4/8/16	System Bxgd	Lab	1740	16.40 hrs	-	KB
4/9/16	Daily Pulser	Lab	1023	10mins	NA	KB
4/9/16	1603100A(10-13)	Republic Services	1036	2450-	u2	KB
4/11	Daily Pulser	Lab	0509	1-	NA	-
4/11	1603126A(1-4)	ucon	0829	245	Rate	-
4/11	1603120A(1-11)	MRT	0829	245	Rate	-
4/11	1603126A(4)	ucon	0828	245	Amu	-
4/11	1603126A(1-4.7)	ucon	0828	245	Pu250	-
4/11	1603126A(1-4)	ucon	0829	245	Pu242	-
4/11	1603126A(1-4)	ucon	0839	245	u2750	-
4/11	1603101A(1-8)	Aurien	0840	245	u2750	-
4/11	1603102A(1-3)	Aurien	0840	245	u2750	-
4/11	1603126A(1-4)	ucon	0841	245	u2750	-
4/11	1603126A(1-4)	ucon	0841	245	Pu242	-

ISO TH NOTES

 EBERLINE SERVICES Work Order Analysis Notes	Oak Ridge Laboratory 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	16-03102
		Analysis Code	THISO
		Run Number	1


#	Date	Dept	User	Notes
1	04/05/16 11:27	PREP	JWOLFE	ALICQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- SUBMITTED SAMPLES TO SEPARATIONS

JWOLFE
415714

 EBERLINE <small>SERVICES</small> Work Order Analysis Notes	Oak Ridge Laboratory 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	16-03102
		Analysis Code	ThISO
		Run Number	1

#	Date	Dept	User	Notes
1	04/05/16 11:27	PREP	JWOLFE	ALIUQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- SUBMITTED SAMPLES TO SEPARATIONS
2	04/07/16 16:49	CHEM	JDEMELAS	Added concentrated HNO ₃ to sample beakers and heated to dryness; Added 20 ml 8N HNO ₃ to samples and transferred to new, labeled C-Tubes, adding 8N HNO ₃ to bring volume to ~35 ml; Preconditioned resin columns with 50 ml 8N HNO ₃ ; Centrifuged samples as needed, and passed through columns; Rinsed C-Tubes with 20 ml 8N HNO ₃ ; Centrifuged rinsates and loaded onto columns; Rinsed columns with 40 ml 8N HNO ₃ ; Eluted Thorium with 50 ml of 8N HCl into clean, labeled 100-ml beakers; Dried-down samples on hotplate; Dissolved samples in ~10 ml of concentrated HCl; Transferred to new, labeled C-Tubes with deionized water, bringing volume to ~15ml. Set samples aside for later precipitation and filtering.

[Handwritten Signature]
 4/7/16

 EBERLINE SERVICES Work Order Analysis Notes	Oak Ridge Laboratory 601 Scarboro Rd. Oak Ridge, TN 37830 Voice: 865.481.0683 www.eberlineservices.com	Internal Work Order	16-03102
		Analysis Code	ThISO
		Run Number	1

#	Date	Dept	User	Notes
1	04/05/16 11:27	PREP	JWOLFE	ALIUQUOTED AND ADDED SPIKES AND TRACERS- ADDED HF AND DRIED SAMPLES DOWN- ADDED MIXED ACIDS AND TOOK SAMPLES TO DRYNESS- SUBMITTED SAMPLES TO SEPARATIONS
2	04/07/16 16:49	CHEM	JDEMELAS	Added concentrated HNO3 to sample beakers and heated to dryness; Added 20 ml 8N HNO3 to samples and transferred to new, labeled C-Tubes, adding 8N HNO3 to bring volume to ~35 ml; Preconditioned resin columns with 50 ml 8N HNO3; Centrifuged samples as needed, and passed through columns; Rinsed C-Tubes with 20 ml 8N HNO3; Centrifuged rinsates and loaded onto columns; Rinsed columns with 40 ml 8N HNO3; Eluted Thorium with 50 ml of 8N HCl into clean, labeled 100-ml beakers; Dried-down samples on hotplate; Dissolved samples in ~10 ml of concentrated HCl; Transferred to new, labeled C-Tubes with deionized water, bringing volume to ~15ml. Set samples aside for later precipitation and filtering.
3	04/08/16 05:24	CHEM	TSMITH	Followed steps 12.2.5 to 12.4.5 in AP-005 . (Precipitated and filtered samples for Thorium)

4-8-16
mm



Reagents Used in an Analysis

Internal Work Order

16-03102

Analysis Code

Run

ThISO

1

Reagent ID	Reagent Name	Reagent Concentration	Analyst ID	Date Recorded
017047P	Hydrofluoric Acid	Reagent Grade	JWOLFE	4/5/2016
017152P	Nitric Acid	Reagent Grade	JWOLFE	4/5/2016
017361P	Perchloric Acid	Reagent Grade	JWOLFE	4/5/2016
016679P	Sulfuric Acid	Reagent Grade	JWOLFE	4/5/2016
017230P	Anion Exchange Resin	Reagent Grade	JDEMELAS	4/7/2016
017371P	Hydrochloric Acid	Reagent Grade	JDEMELAS	4/7/2016
017349P	Nitric Acid	Reagent Grade	JDEMELAS	4/7/2016
017465S	Hydrochloric Acid	8N	JDEMELAS	4/7/2016
017461S	Nitric Acid	8N	JDEMELAS	4/7/2016
017437S	Carbon substrate	Solution	TSMITH	4/8/2016
017391S	Cerrium Carrier	0.1mg/ml	TSMITH	4/8/2016
017047P	Hydrofluoric Acid	Reagent Grade	TSMITH	4/8/2016
017408P	Reagent Alcohol	Reagent Grade	TSMITH	4/8/2016

Alpha #7

73

Date	Sample #	Client	Function	CPT	Analysis	Tool
4/2	1604018A(4)	Ucon	0850	245	Amv	—
4/2	1604018A(4)	Ucon	0850	245	Amv	—
4/2	1604018A(1-4)	Ucon	0851	245	Pyzo	—
4/2	1604018A(1-4)	Ucon	0851	245	Pyzo	—
4/2	1604018A(1-2)	Ucon	0852	245	uuzo	—
4/8/16	1604018A(3-4)	Ucon	1018	2450	uuz	KB
4/8/16	1604018A(1-4)	Ucon	1019	2450	Np	KB
4/8/16	1604018A(1-4)	Ucon	1020	2450	ISO-Th	KB
4/8/16	1603096A(1-16)	Republic Services	10	2450	Rate	KB
4/8/16	1603096A(1-14)	Republic Services	1149	2450	Rate	KB
4/8/16	1604033A(1-2)	Ucon	1149	2450	uuz	KB
4/8	1603076A(15-19)	Rep. Serv.	1215	245	Rate	—
4/8	1603100A(1-5)	Rep. Serv.	1716	245	Thz	—
4/8/16	1603100A(13)	Republic Services	1444	2450	ISO-Th	KB
4/8/16	1603102A(1-6)	Auxien	1445	2450	ISO-Th	KB
4/8/16	1603100A(1-9)	Republic Services	1446	2450	uuz	KB

GAMMA NOTES

DATE	SAMPLE #	Client	LoadTime	CTTime	Analysis	Tech
4/7/16	GAS-149	Lab	1206	15min	-8	AG
4/7/16	Daily Bkgd	Lab	1233	15min	8	AG
4/9/16	System Bkgd	Lab	0852	24hr	8	KD
4/11	ET-1201	LAS	0514	15	✓	✓
4/11	Daily Bkgd	LAS	0516	15	✓	✓
4/11	1607101-01	Auxier	0659	7	✓	✓
4/11	1607102-01	Auxier	0724	7	✓	✓

DATE	SAMPLE #	Client	Load Time	CT Time	Analysis	Tech
4/11/16	1604042-07	USA	0753	1h	✓	C
4/11/16	1604042-04	USA	0854	1h	✓	C
4/11/16	1604042-09	USA	0956	1h	✓	C
4/11/16	1604042-12	USA	1100	1h	✓	C
4/11/16	1604044-07	USA	1203	1h	✓	C
4/11/16	1604044-04	USA	1304	1h	✓	C
4/11/16	1604044-07	USA	1405	1hr	✓	KB
4/11/16	1604044-10	USA	1507	1hr	✓	KB
4/11/16	1604044-14	USA	1607	1hr	✓	KB
4/11/16	1604044-17	USA	1708	1hr	✓	KB
4/11/16	1604047-03	USA	1911	1hr	✓	KB
4/11/16	1604047-04	USA	1912	1hr	✓	KB
4/12	0751402	USA	0755	1r	✓	C
4/12	07546	USA	0756	1r	✓	C
4/12	07556	USA	0756	1r	✓	C
4/12	1604045-08	USA	0700	1h	✓	C
4/12	1604046-06	USA	0806	1h	✓	C
4/12	1604046-08	USA	0808	1h	✓	C
4/12	1604046-11	USA	1014	1h	✓	C
4/12	1604046-15	USA	1117	1h	✓	C
4/12/16	1604054-03	City of OR	1219	2hr	✓	KB
4/12/16	1604054-04	City of OR	1421	2hr	✓	KB
4/12/16	1603098-15	Rep. Services	1622	15 min	Pa	KB
4/12/16	1603094-09	CT Dept of EEP	1612	4hr	✓	KB
4/17	0751402	USA	0755	1r	✓	C
4/17	07546	USA	0756	1r	✓	C
4/17	07556	USA	0756	1r	✓	C
4/17	1607102-07	Auxier	0707	1h	✓	C
4/17	1607102-04	Auxier	0804	1h	✓	C
4/17	1607102-05	Auxier	0912	1h	✓	C
4/13/16	1603102-06	Auxier	1013	1h	✓	KB
4/13/16	1607102-02	Auxier	1315	1h	✓	C
4/13/16	1604072-03	Bionomics	1113	1hr	✓	KB
4/13/16	1604072-04	Bionomics	1213	1hr	✓	KB

SECTION VIII
ANALYTICAL DATA (ISOTOPIC URANIUM)

16-03102

UUISO

Run 1

Work Order	16-03102	Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
Analysis Code	UUISO	01	LCS	LCS		03/22/16 00:00	1.0000E+00
Run	1	02	MBL	BLANK		03/22/16 00:00	1.0000E+00
Date Received	3/21/2016	03	DUP	SEDIMENT 2016-03-16A	36	03/16/16 13:35	9.9820E-01
Lab Deadline	4/12/2016	04	DO	SEDIMENT 2016-03-16A	36	03/16/16 13:35	9.9600E-01
Client	Auxier & Associates, Inc.	05	TRG	SEDIMENT 2016-03-16B	38	03/16/16 13:55	1.0019E+00
Project	WESTLAKE NCC	06	TRG	SEDIMENT 2016-03-16B DUP	34	03/16/16 13:55	1.0046E+00
Report Level	4						
Activity Units	pCi						
Aliquot Units	g						
Matrix	SO						
Method	EML U-02 Modified						
Instrument Type	Alpha Spectroscopy						
Radiometric Tracer	U-232						
Radiometric Sol#	U-10a						
Tracer Act (dpm/g)	18.56						
Carrier							
Carrier Conc (mg/ml)							

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

00003
3/21/2016

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
 ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

00064
0424116

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
 ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

00065
EJ 7042416

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Count Room Report
Client: Auxier Associates, Inc.

16-03102-UUIISO-1 (pCi/g) in SO
Tracer ID: U-10a

Printed: 4/11/2016 5:28 AM
Page 1 of 1

[illegible]

[illegible]

[illegible]

Comments	
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Technician:

MOIRE Date: 2/5/16

100
4/11/16

Apex-Alpha™

Sample Description: SPIKE
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001482
Batch Identification: 1603102A-UU
Sample Identification: 01
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_056
Chamber Serial Number: 10006124B
Detector Serial Number: 56
Env. Background: System Bkgd 149954
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 4/11/2016 6:26:08 AM
Acquisition Date/Time: 4/11/2016 8:40:57 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.606 mL
Effective Efficiency: 0.1937 +/- 0.0111
Counting Efficiency: 0.1647 +/- 0.0029 on 12/11/2015 11:36:29 AM
Chem. Recovery Factor: 1.1761 +/- 0.0703

Control Certificate Name: NatU_U-8A
Chem. Recov. of Control: U-238 0.767368 +/- 0.061276
Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT

Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T 5.273	367.64	10.24	1.36	0.00E+000	6.3
U-234	4.729	457.15	9.18	0.85	0.00E+000	22.6
U-235	4.386	30.32	36.06	0.68	0.00E+000	3.0
U-238	4.151	452.32	9.22	0.68	0.00E+000	9.4

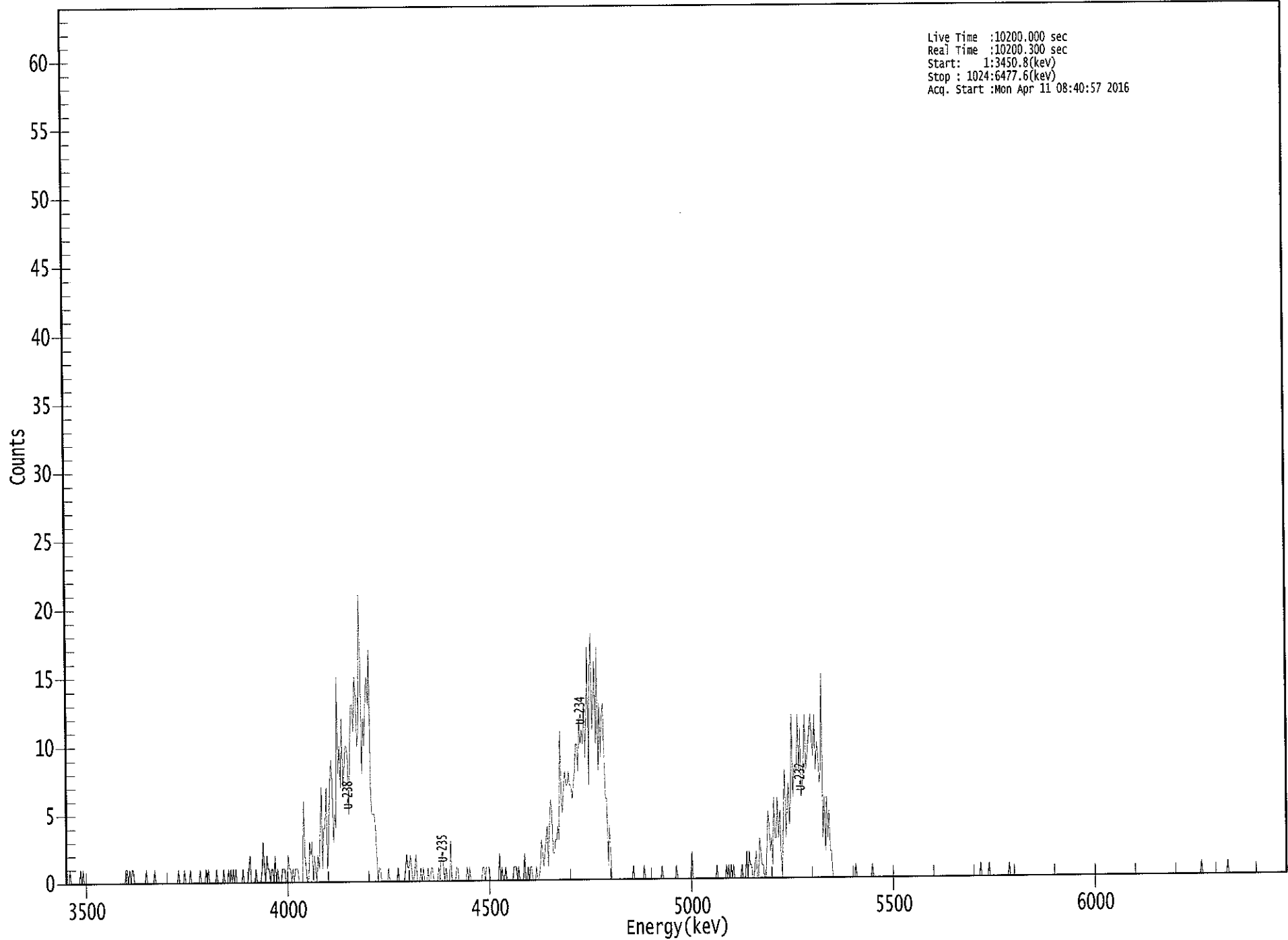
T = Tracer Peak used for Effective Efficiency

NUCLIDE ANALYSIS RESULTS

Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.994	5302.50*	5.04E+000 +/- 5.64E-001	9.40E-002 +/- 1.05E-002
U-234	0.993	4761.50*	6.27E+000 +/- 9.07E-001	8.21E-002 +/- 9.19E-003
U-235	1.000	4385.50*	5.13E-001 +/- 1.94E-001	9.54E-002 +/- 1.07E-002
U-238	0.992	4184.40*	6.17E+000 +/- 8.95E-001	7.70E-002 +/- 8.62E-003

4/11/16

0000148229.CNF



Live Time :10200.000 sec
Real Time :10200.300 sec
Start: 1:3450.8(kev)
Stop : 1024:6477.6(kev)
Acq. Start :Mon Apr 11 08:40:57 2016

ROI Type: 1

ROI Type: 3

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: 01

Elapsed Live time: 10200

Elapsed Real Time: 10200

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	1	0	0	0	0
9:	0	0	0	0	1	0	1	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	1	1	0	1	0	1
57:	1	0	0	0	0	0	0	0
65:	0	0	0	1	0	0	0	0
73:	0	0	1	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	1	0
97:	0	0	0	1	0	0	0	0
105:	1	0	0	0	0	0	0	0
113:	1	0	0	0	0	1	0	1
121:	0	0	0	0	0	0	1	0
129:	0	0	0	0	1	0	0	0
137:	1	0	1	0	1	0	1	0
145:	0	0	0	0	1	0	0	0
153:	0	1	2	0	0	0	0	1
161:	0	0	0	0	1	3	1	0
169:	2	1	1	0	1	1	0	2
177:	0	1	0	0	0	1	1	1
185:	0	0	2	1	1	0	1	0
193:	1	1	1	0	0	0	0	6
201:	2	1	0	0	3	2	3	0
209:	2	1	0	2	1	4	7	1
217:	4	4	7	1	3	7	9	8
225:	3	5	4	15	8	10	7	12
233:	7	8	10	10	9	5	10	13
241:	13	11	15	14	10	11	21	16
249:	8	12	10	14	15	13	17	7
257:	5	5	5	4	2	0	1	1
265:	0	0	0	0	0	0	1	0
273:	0	0	0	0	0	0	1	0
281:	0	0	0	0	1	2	1	1
289:	2	1	0	0	1	2	0	0
297:	0	1	0	1	0	0	0	1
305:	0	0	1	1	0	0	0	0
313:	1	0	2	2	1	0	1	0
321:	0	0	3	0	0	0	0	1
329:	1	0	0	0	0	0	0	0
337:	1	0	1	0	0	0	0	0
345:	0	0	0	0	0	1	1	0
353:	1	1	1	0	0	0	0	0
361:	0	0	0	2	0	1	0	0

369: 1 0 0 0 0 0 0 0 1

Sample Title: 01

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	1	1	0	1	0	0	0	0
385:	2	0	0	1	0	1	1	0
393:	0	0	1	0	0	1	3	2
401:	1	2	3	4	1	4	6	5
409:	2	2	3	3	4	3	11	6
417:	5	7	8	7	7	8	7	7
425:	6	7	8	10	10	8	12	10
433:	11	10	13	9	12	17	7	15
441:	18	11	13	16	10	17	8	13
449:	9	12	13	9	6	6	1	4
457:	2	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	0	1	0	0	0	0
481:	0	0	0	0	1	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	1	0	0	0	0
505:	0	0	0	0	0	0	0	1
513:	0	0	0	0	0	0	0	0
521:	0	0	0	0	2	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	1	0	0	0	0	0	0
553:	0	1	0	1	0	1	0	1
561:	0	0	0	0	0	0	1	0
569:	0	0	2	0	2	1	1	0
577:	0	1	2	0	0	3	2	1
585:	1	0	0	2	5	4	2	3
593:	1	6	3	3	6	3	5	2
601:	0	6	8	3	5	7	4	6
609:	12	6	8	8	8	12	8	11
617:	6	7	9	12	8	9	10	11
625:	12	10	9	12	8	10	9	7
633:	8	15	3	6	2	6	3	5
641:	2	2	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	1	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	1	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	1	0
769:	0	0	0	0	0	1	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	1	0
793:	0	0	0	0	0	0	0	0

801: 0 0 0 0 0 0 0 0

Sample Title: 01

Channel	-----	-----	-----	-----	-----	-----	-----
809:	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	1
953:	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0
969:	0	0	0	0	0	1	0
977:	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0



KB
4/11/16

Sample Description: BLANK
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001482
Batch Identification: 1603102A-UU
Sample Identification: 02
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_057
Chamber Serial Number: 01017326A
Detector Serial Number: 57
Env. Background: System Bkgd 149955
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 4/11/2016 6:26:08 AM
Acquisition Date/Time: 4/11/2016 8:40:53 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.606 mL
Effective Efficiency: 0.1849 +/- 0.0108
Counting Efficiency: 0.1636 +/- 0.0029 on 12/11/2015 11:36:28 AM
Chem. Recovery Factor: 1.1301 +/- 0.0687

Peak Match Tolerance: 0.150 MeV

PEAK AREA REPORT							

Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)

U-232	T	5.283	351.00	10.48	0.00	0.00E+000	25.9
U-234		4.762	7.00	79.20	0.00	0.00E+000	3.0
U-235		4.423	2.00	169.74	0.00	0.00E+000	3.0
U-238		4.174	4.66	94.59	0.34	0.00E+000	3.0

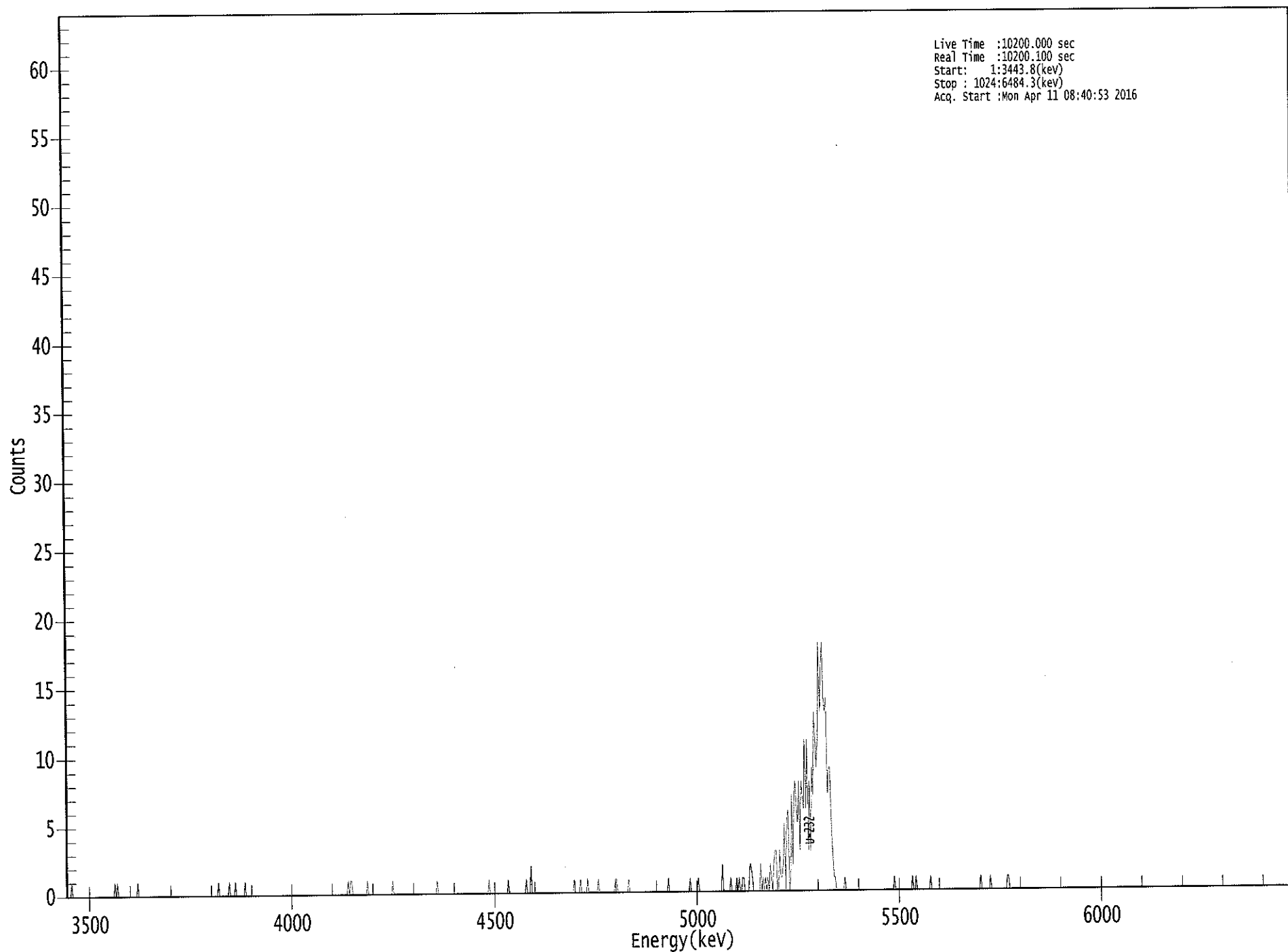
T = Tracer Peak used for Effective Efficiency

----- ----- NUCLIDE ANALYSIS RESULTS ----- -----						
Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)		MDA (pCi/gram)	
U-232	0.997	5302.50*	5.04E+000	+/- 5.75E-001	8.61E-002	+/- 9.82E-003
U-234	1.000	4761.50*	1.01E-001	+/- 8.04E-002	8.61E-002	+/- 9.82E-003
U-235	0.990	4385.50*	3.54E-002	+/- 6.03E-002	1.06E-001	+/- 1.21E-002
U-238	0.999	4184.40*	6.66E-002	+/- 6.35E-002	6.84E-002	+/- 7.80E-003

AG
4/11/16

: 000014

0000148240.CNF



Live Time :10200.000 sec
Real Time :10200.100 sec
Start: 1:3443.8(keV)
Stop : 1024:6484.3(keV)
Acq. Start :Mon Apr 11 08:40:53 2016

ROI Type: 1

ROI Type: 3

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: 02

Elapsed Live time: 10200

Elapsed Real Time: 10200

Channel	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	1	0	0
9:	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0
41:	1	0	1	0	0	0	0
49:	0	0	0	0	0	0	0
57:	0	0	0	1	0	0	0
65:	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0
121:	0	0	0	0	0	1	0
129:	0	0	0	0	0	0	1
137:	0	0	0	0	1	0	0
145:	0	0	0	0	1	0	0
153:	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0
233:	0	0	1	0	1	1	0
241:	0	0	0	0	0	0	0
249:	0	0	1	0	0	0	0
257:	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	1
273:	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0
305:	0	0	0	0	1	0	0
313:	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	1
353:	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	1

369: 0 0 0 0 0 0 0 0 0

Sample Title: 02

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	0	0	0	0	0	0	1	0
385:	0	0	2	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	0	0
409:	0	0	0	0	0	0	0	0
417:	0	0	0	0	0	0	1	0
425:	0	0	0	1	0	0	0	0
433:	0	1	0	0	0	0	0	0
441:	0	0	1	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	1	1	0	0	0	0	0	0
465:	0	0	0	1	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	0	0	1	0	0	0
505:	0	0	0	0	0	0	0	0
513:	0	0	0	0	0	0	1	0
521:	0	0	0	0	0	1	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	2	0	0	0	0	0	0
553:	1	0	0	0	0	1	0	1
561:	0	0	1	1	0	0	0	0
569:	2	2	1	0	0	0	0	0
577:	0	2	0	1	0	1	0	1
585:	0	2	1	0	2	3	3	0
593:	0	3	1	1	2	5	0	5
601:	6	0	1	7	2	7	8	6
609:	5	8	3	8	7	6	11	6
617:	11	3	8	3	9	7	13	11
625:	9	11	18	13	16	18	14	13
633:	14	7	9	9	5	3	1	1
641:	0	0	0	0	0	0	0	1
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	1	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	1
705:	0	0	1	0	0	0	0	0
713:	0	0	0	0	0	0	1	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	1	0	0	0	0	0	0	0
769:	1	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	1	1
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801: 0 0 0 0 0 0 0 0

Sample Title: 02

Channel	-----	-----	-----	-----	-----	-----	-----
809:	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0
1017:	0	0	1	0	0	0	0



108
4/11/16

Sample Description: SEDIMENT 2016-03-16A-DUP
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001482
Batch Identification: 1603102A-UU
Sample Identification: 03
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_058
Chamber Serial Number: 01017326B
Detector Serial Number: 58
Env. Background: System Bkgd 149956
Reagent Blank: <not performed>

Sample Size: 9.982E-001 +/- 0.000E+000 gram
Sample Date/Time: 3/16/2016 6:26:08 AM
Acquisition Date/Time: 4/11/2016 8:40:55 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.604 mL
Effective Efficiency: 0.1547 +/- 0.0097
Counting Efficiency: 0.1680 +/- 0.0030 on 12/11/2015 11:36:26 AM
Chem. Recovery Factor: 0.9207 +/- 0.0601

Peak Match Tolerance: 0.150 MeV

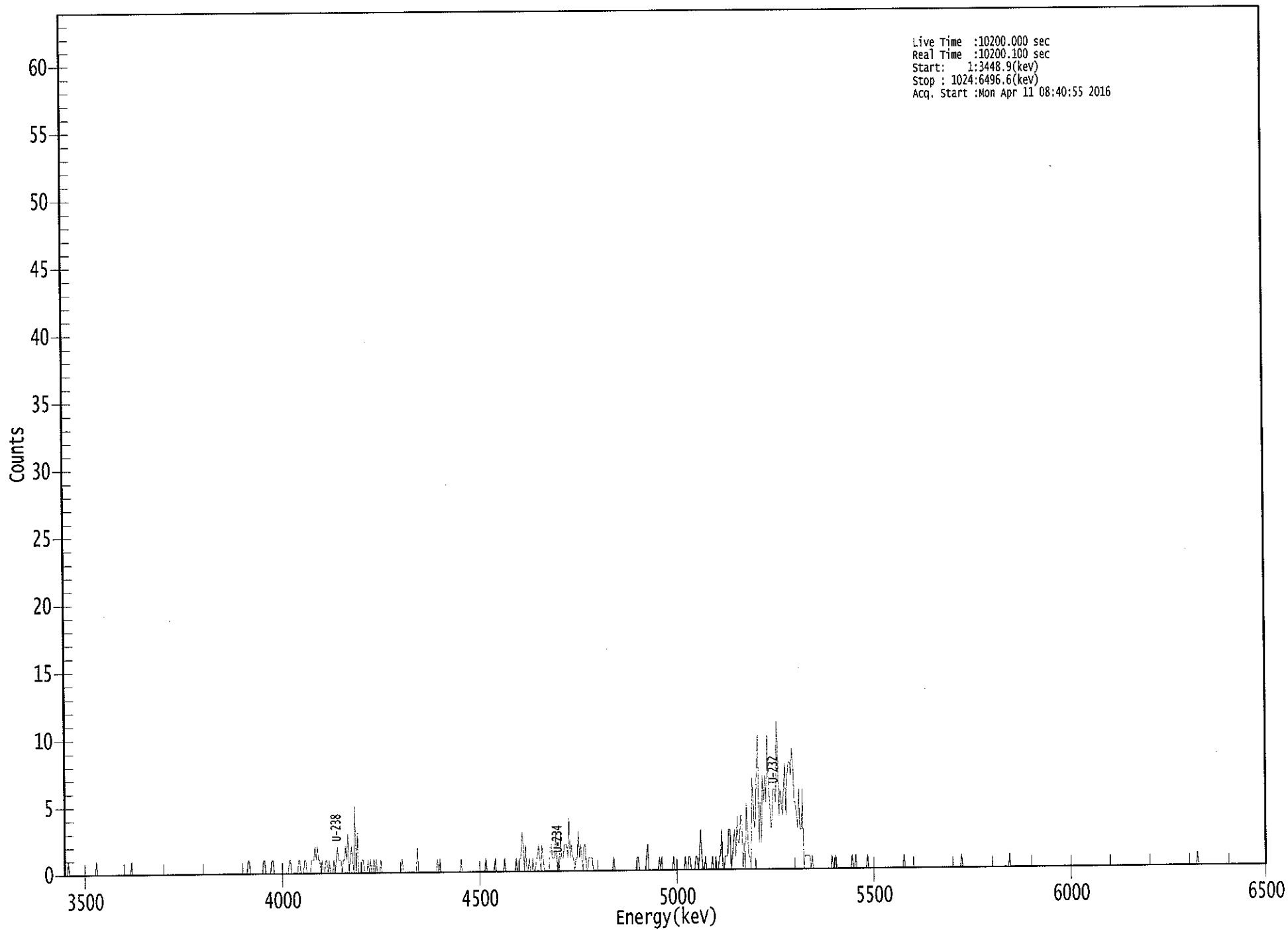
		----- ----- PEAK AREA REPORT ----- -----					
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.247	292.83	11.46	0.17	0.00E+000	7.8
U-234		4.701	68.00	23.94	0.00	0.00E+000	4.0
U-235		4.372	6.00	86.43	0.00	0.00E+000	3.0
U-238		4.141	52.81	27.32	1.19	0.00E+000	3.0

T = Tracer Peak used for Effective Efficiency

----- ----- NUCLIDE ANALYSIS RESULTS ----- -----				
Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.979	5302.50*	5.04E+000 +/- 6.20E-001	7.18E-002 +/- 8.84E-003
U-234	0.974	4761.50*	1.17E+000 +/- 3.15E-001	1.03E-001 +/- 1.27E-002
U-235	0.999	4385.50*	1.27E-001 +/- 1.11E-001	1.27E-001 +/- 1.57E-002
U-238	0.986	4184.40*	9.04E-001 +/- 2.71E-001	1.13E-001 +/- 1.39E-002

AG
4/11/16

0000148230.CNF



***** S P E C T R A L D A T A R E P O R T *****

Sample Title: 03

Elapsed Live time: 10200

Elapsed Real Time: 10200

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	1	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	1	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	1	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	1	1	0	0
161:	0	0	0	0	0	0	0	0
169:	0	1	1	0	0	0	0	0
177:	1	1	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	1
193:	1	0	0	0	0	0	0	1
201:	1	0	0	0	1	1	0	0
209:	0	0	1	1	1	2	1	2
217:	1	1	0	1	0	0	1	1
225:	0	1	0	0	0	1	0	1
233:	2	1	1	1	0	1	1	2
241:	1	3	0	1	2	1	0	5
249:	0	3	0	0	0	1	1	0
257:	0	0	1	0	1	0	0	1
265:	0	1	0	0	0	1	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	1
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	2	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	1	0	1
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	1	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	0	0	0	0	0	0	1	0
361:	0	0	0	0	0	0	1	0

369: 0 0 0 0 0 0 0 1 0

Sample Title: 03

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	0	0	0	0	0	0	0	0
385:	1	0	0	1	1	3	2	0
393:	2	0	0	1	0	0	1	0
401:	0	1	1	2	1	0	2	1
409:	0	0	0	0	0	2	2	1
417:	1	1	3	0	1	0	3	1
425:	1	2	2	2	1	4	1	2
433:	1	1	0	1	1	3	1	2
441:	1	0	2	2	0	0	1	1
449:	1	1	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	1	0	0	0	0
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	1
489:	1	0	0	0	0	0	0	1
497:	2	0	0	0	0	0	0	0
505:	0	0	1	0	1	0	0	0
513:	0	0	0	0	0	0	1	0
521:	0	0	0	0	0	0	0	0
529:	1	0	0	1	1	0	0	0
537:	0	1	1	0	1	3	1	0
545:	0	1	0	0	0	0	0	1
553:	0	0	1	0	0	1	1	3
561:	0	0	1	1	1	3	3	0
569:	1	2	3	1	4	2	2	4
577:	4	0	2	0	5	3	1	1
585:	0	7	5	3	4	8	10	2
593:	5	2	7	5	7	5	10	7
601:	5	3	4	6	6	5	11	9
609:	4	6	5	4	6	8	4	7
617:	8	8	7	9	8	5	5	4
625:	3	6	3	3	6	0	1	1
633:	1	1	1	0	1	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	1	0	0
657:	1	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	1	0
673:	0	1	0	0	0	0	0	0
681:	0	0	0	1	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	1	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	1	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801: 0 0 0 0 1 0 0 0

Sample Title: 03

Channel	-----	-----	-----	-----	-----	-----	-----	-----
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0	0
961:	0	0	0	0	1	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0



103
4/11/16

Sample Description: SEDIMENT 2016-03-16A
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001482
Batch Identification: 1603102A-UU
Sample Identification: 04
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_003
Chamber Serial Number:
Detector Serial Number: 3
Env. Background: System Bkgd 149924
Reagent Blank: <not performed>

Sample Size: 9.960E-001 +/- 0.000E+000 gram
Sample Date/Time: 3/16/2016 6:26:08 AM
Acquisition Date/Time: 4/11/2016 11:31:58 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.605 mL
Effective Efficiency: 0.1836 +/- 0.0107
Counting Efficiency: 0.1612 +/- 0.0029 on 12/11/2015 2:46:09 PM
Chem. Recovery Factor: 1.1386 +/- 0.0695

Peak Match Tolerance: 0.150 MeV

		----- ----- PEAK AREA REPORT ----- -----					
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.255	347.83	10.51	0.17	0.00E+000	11.9
U-234		4.714	65.32	24.40	0.68	0.00E+000	8.0
U-235		4.412	5.32	91.11	0.68	0.00E+000	3.0
U-238		4.126	76.83	22.39	0.17	0.00E+000	4.5

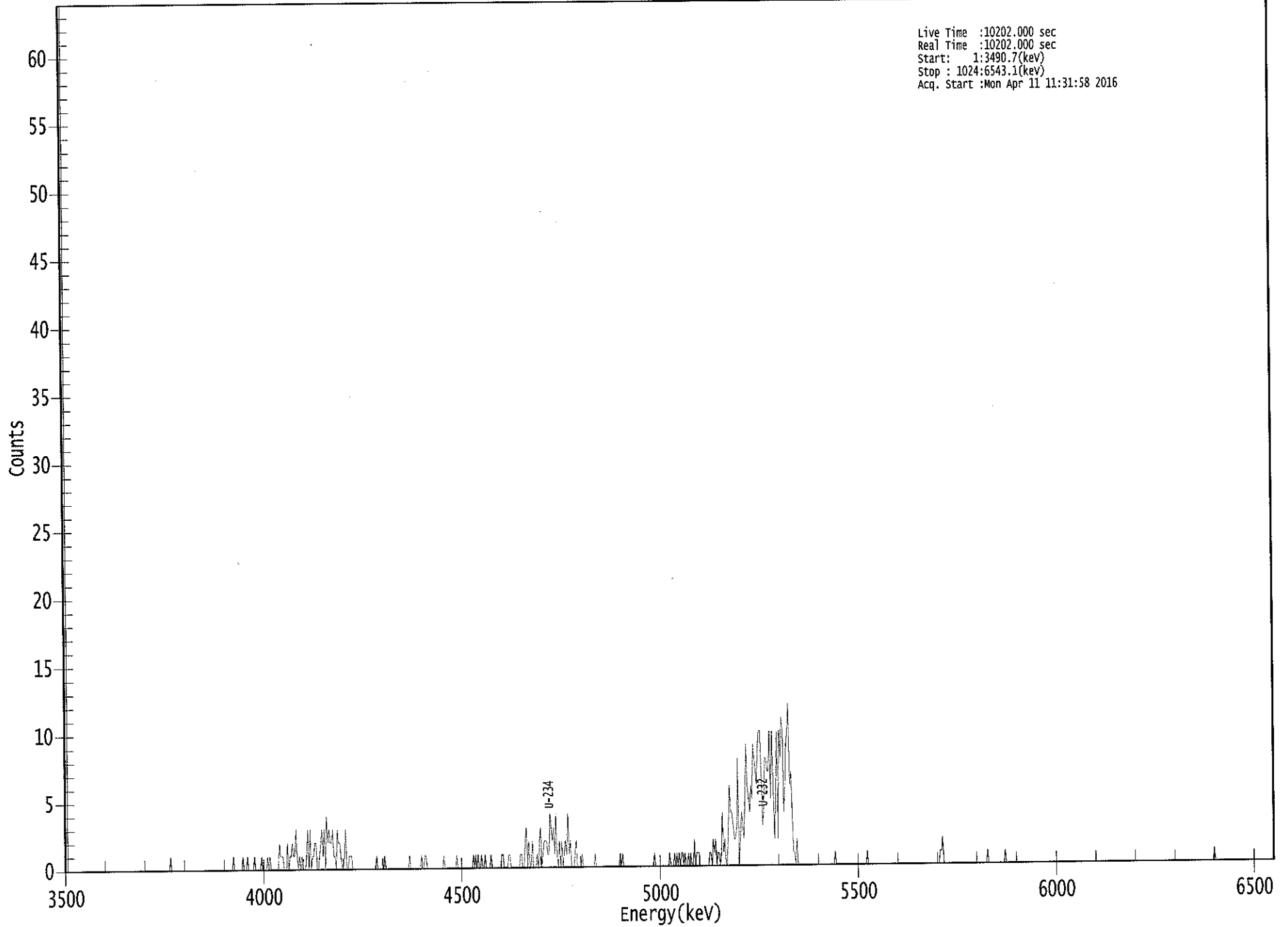
T = Tracer Peak used for Effective Efficiency

----- ----- NUCLIDE ANALYSIS RESULTS ----- -----				
Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)	MDA (pCi/gram)
U-232	0.984	5302.50*	5.05E+000 +/- 5.78E-001	6.06E-002 +/- 6.94E-003
U-234	0.984	4761.50*	9.48E-001 +/- 2.56E-001	8.19E-002 +/- 9.37E-003
U-235	0.995	4385.50*	9.53E-002 +/- 8.75E-002	1.01E-001 +/- 1.16E-002
U-238	0.976	4184.40*	1.11E+000 +/- 2.79E-001	6.03E-002 +/- 6.90E-003

AG
4/11/16

0000148259.CNF

Live Time :10202.000 sec
Real Time :10202.000 sec
Start: 1:3490.7(kev)
Stop : 1024:6543.1(kev)
Acq. Start :Mon Apr 11 11:31:58 2016



ROI Type: 1

ROI Type: 3

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: 04

Elapsed Live time: 10202

Elapsed Real Time: 10202

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	10202	10202	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	1	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	1	0
145:	0	0	0	0	0	0	1	0
153:	0	0	1	0	0	0	0	0
161:	1	0	0	0	0	0	1	0
169:	0	0	0	1	0	1	0	0
177:	0	0	0	0	0	2	1	1
185:	1	0	0	0	2	0	1	0
193:	2	1	1	3	1	0	1	3
201:	1	0	0	0	1	3	0	1
209:	0	1	1	2	2	0	0	3
217:	2	3	1	3	0	4	2	3
225:	2	2	3	1	1	0	3	2
233:	2	1	0	0	1	3	0	0
241:	1	1	1	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	1
265:	0	0	0	0	0	0	1	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	1	0	0	0	0
297:	0	0	0	0	0	1	0	0
305:	1	1	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	1	0	0	0	0	0	0	0
329:	0	0	0	1	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	1	0	1	0	1	0	0
353:	1	0	0	1	0	0	0	0
361:	1	0	0	0	0	0	0	0

369: 0 1 1 0 0 0 0 1

Sample Title: 04

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	1	0	0	0	0	0	0	0
385:	0	1	1	0	0	2	3	0
393:	2	0	0	2	0	0	0	1
401:	0	2	3	0	1	2	2	2
409:	1	1	4	3	2	3	1	4
417:	1	0	2	0	2	0	1	2
425:	1	4	1	2	0	0	0	1
433:	2	0	0	0	0	1	0	0
441:	0	0	0	0	0	0	0	0
449:	1	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	1	0	1
473:	0	0	0	0	0	0	0	0
481:	0	0	0	0	0	0	0	0
489:	0	0	0	0	0	0	0	0
497:	0	0	1	0	0	0	0	0
505:	0	0	0	0	0	0	0	1
513:	0	0	0	1	0	1	0	1
521:	0	1	1	0	1	0	0	1
529:	0	1	0	0	2	0	1	1
537:	1	0	0	0	0	0	0	0
545:	0	1	1	0	2	1	2	0
553:	1	1	0	1	4	1	2	0
561:	0	3	6	4	4	3	2	2
569:	3	8	0	2	4	3	2	5
577:	9	6	5	4	6	5	9	8
585:	7	6	9	10	10	7	3	4
593:	8	8	7	7	10	5	10	7
601:	2	5	10	2	10	8	11	10
609:	4	6	9	10	12	6	7	4
617:	1	1	0	2	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	1	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	1	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	1	1	2	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	1	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	1	0	0	0	0

801: 0 0 0 0 0 0 0 0

Sample Title: 04

Channel	-----	-----	-----	-----	-----	-----	-----
809:	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0
969:	0	0	0	0	1	0	0
977:	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0



208
4/11/16

Sample Description: SEDIMENT 2016-03-16B
 Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001482
 Batch Identification: 1603102A-UU
 Sample Identification: 05
 Sample Geometry: Shelf 2
 Procedure Description: U iso

Detector Name: Alpha_004
 Chamber Serial Number:
 Detector Serial Number: 4
 Env. Background: System Bkgd 149925
 Reagent Blank: <not performed>

Sample Size: 1.002E+000 +/- 0.000E+000 gram
 Sample Date/Time: 3/16/2016 6:26:08 AM
 Acquisition Date/Time: 4/11/2016 11:31:59 AM
 Acquisition Live Time: 170.0 minutes
 Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
 Tracer Quantity: 0.604 mL
 Effective Efficiency: 0.1668 +/- 0.0102
 Counting Efficiency: 0.1879 +/- 0.0033 on 12/11/2015 2:46:10 PM
 Chem. Recovery Factor: 0.8881 +/- 0.0562

Peak Match Tolerance: 0.150 MeV

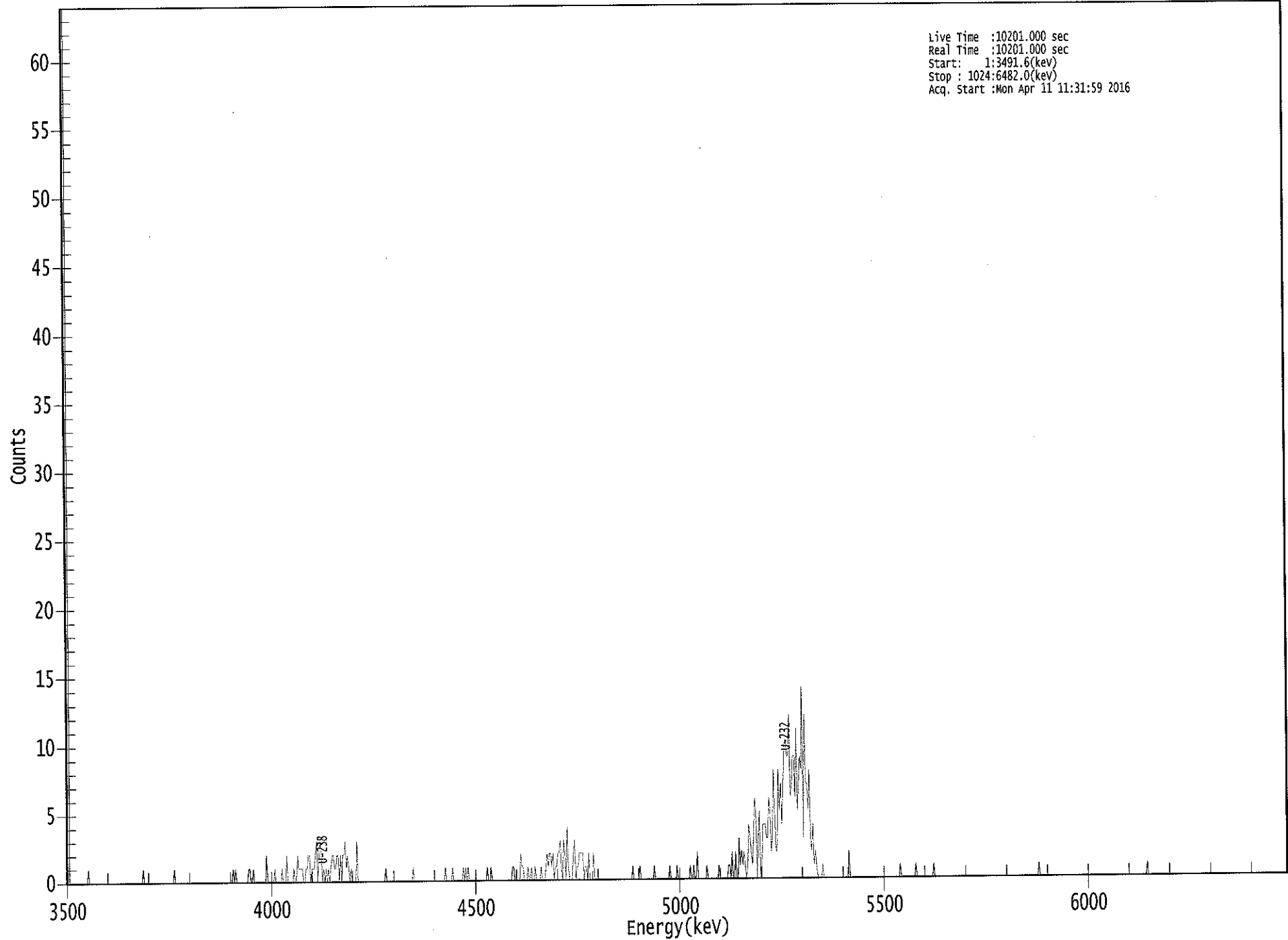
----- ----- PEAK AREA REPORT ----- -----							
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.253	316.00	11.04	0.00	0.00E+000	10.6
U-234		4.704	58.81	25.86	1.19	0.00E+000	3.4
U-235		4.433	5.83	82.55	0.17	0.00E+000	2.9
U-238		4.120	63.00	24.89	0.00	0.00E+000	5.8

T = Tracer Peak used for Effective Efficiency

----- ----- NUCLIDE ANALYSIS RESULTS ----- -----						
Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)		MDA (pCi/gram)	
U-232	0.983	5302.50*	5.02E+000	+/- 5.99E-001	9.53E-002	+/- 1.14E-002
U-234	0.976	4761.50*	9.34E-001	+/- 2.66E-001	1.05E-001	+/- 1.25E-002
U-235	0.984	4385.50*	1.14E-001	+/- 9.53E-002	8.18E-002	+/- 9.75E-003
U-238	0.971	4184.40*	9.96E-001	+/- 2.75E-001	9.48E-002	+/- 1.13E-002

AG
4/11/16

0000148260.CNF



Live Time :10201.000 sec
Real Time :10201.000 sec
Start: 1:3491.6(kev)
Stop : 1024:6482.0(kev)
Acq. Start :Mon Apr 11 11:31:59 2016

ROI Type: 1

ROI Type: 3

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: 05

Elapsed Live time: 10201

Elapsed Real Time: 10201

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	10201	10201	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	1	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	1	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	1	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	1	0	1	0	0
145:	0	0	0	0	0	0	0	0
153:	1	1	0	0	1	0	0	0
161:	0	0	0	0	0	0	0	2
169:	0	0	0	0	0	0	1	0
177:	0	0	0	0	1	0	0	0
185:	2	0	0	0	0	0	1	0
193:	0	2	1	1	1	1	0	0
201:	1	1	2	2	0	1	1	1
209:	2	3	0	2	3	2	0	1
217:	0	1	0	1	0	1	2	2
225:	1	1	2	2	0	2	0	2
233:	2	3	1	2	1	0	1	0
241:	0	0	0	3	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	1	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	1	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	1	0	0
321:	0	0	0	1	0	0	0	0
329:	0	0	0	0	1	0	1	0
337:	1	0	0	0	0	0	0	0
345:	0	0	0	0	0	0	0	0
353:	1	0	0	1	0	0	0	0
361:	0	0	0	0	0	0	0	0

369: 0 0 0 0 0 1 1 0

Sample Title: 05

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	0	0	0	0	2	1	1	0
385:	0	0	1	0	0	1	0	0
393:	1	0	0	0	0	1	0	0
401:	0	1	2	1	2	2	1	2
409:	0	1	1	2	2	3	1	0
417:	3	2	0	4	1	0	0	0
425:	2	3	0	1	1	2	2	2
433:	2	0	1	1	0	2	0	0
441:	0	2	0	0	0	0	0	0
449:	0	0	0	0	0	0	0	0
457:	0	0	0	0	0	0	0	0
465:	0	0	0	0	0	0	0	0
473:	0	0	1	0	0	0	0	0
481:	1	0	0	0	0	0	0	0
489:	0	0	0	0	1	0	0	0
497:	0	0	0	0	0	0	0	0
505:	0	1	0	0	0	0	0	1
513:	0	0	0	0	0	0	0	0
521:	0	0	1	0	0	1	0	0
529:	2	0	0	0	0	0	0	0
537:	1	0	0	0	0	0	0	0
545:	0	0	1	0	0	0	0	0
553:	0	0	1	1	0	2	0	0
561:	2	0	0	3	1	2	1	2
569:	1	0	1	4	3	2	1	3
577:	6	5	0	3	5	0	1	4
585:	4	4	3	3	6	5	2	3
593:	8	5	2	2	8	5	7	4
601:	7	10	10	9	9	12	6	7
609:	9	9	6	11	5	7	9	8
617:	14	3	12	7	7	5	8	3
625:	2	4	1	2	1	0	0	0
633:	0	1	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	2
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	1	0	0	0	0	0
705:	0	0	0	0	0	0	0	1
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	1	0
729:	0	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	0	0	0	0	0	0
777:	0	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801: 0 0 0 0 0 0 0 0

Sample Title: 05

Channel	-----	-----	-----	-----	-----	-----	-----
809:	0	0	0	0	0	0	1
817:	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0
905:	0	1	0	0	0	0	0
913:	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0
961:	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0



108
4/11/16

Sample Description: SEDIMENT 2016-03-16B DUP
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001482
Batch Identification: 1603102A-UU
Sample Identification: 06
Sample Geometry: Shelf 2
Procedure Description: U iso

Detector Name: Alpha_010
Chamber Serial Number:
Detector Serial Number: 10
Env. Background: System Bkgd 149926
Reagent Blank: <not performed>

Sample Size: 1.005E+000 +/- 0.000E+000 gram
Sample Date/Time: 3/16/2016 6:26:08 AM
Acquisition Date/Time: 4/11/2016 11:31:57 AM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: U232_UU-10A
Tracer Quantity: 0.602 mL
Effective Efficiency: 0.1536 +/- 0.0097
Counting Efficiency: 0.1895 +/- 0.0033 on 12/11/2015 2:46:10 PM
Chem. Recovery Factor: 0.8102 +/- 0.0532

Peak Match Tolerance: 0.150 MeV

----- ----- PEAK AREA REPORT ----- -----							
Nuclide		Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
U-232	T	5.251	289.62	11.57	2.38	0.00E+000	4.7
U-234		4.716	53.96	27.27	2.04	0.00E+000	3.4
U-235		4.409	7.32	76.28	0.68	0.00E+000	2.9
U-238		4.117	39.66	31.28	0.34	0.00E+000	3.6

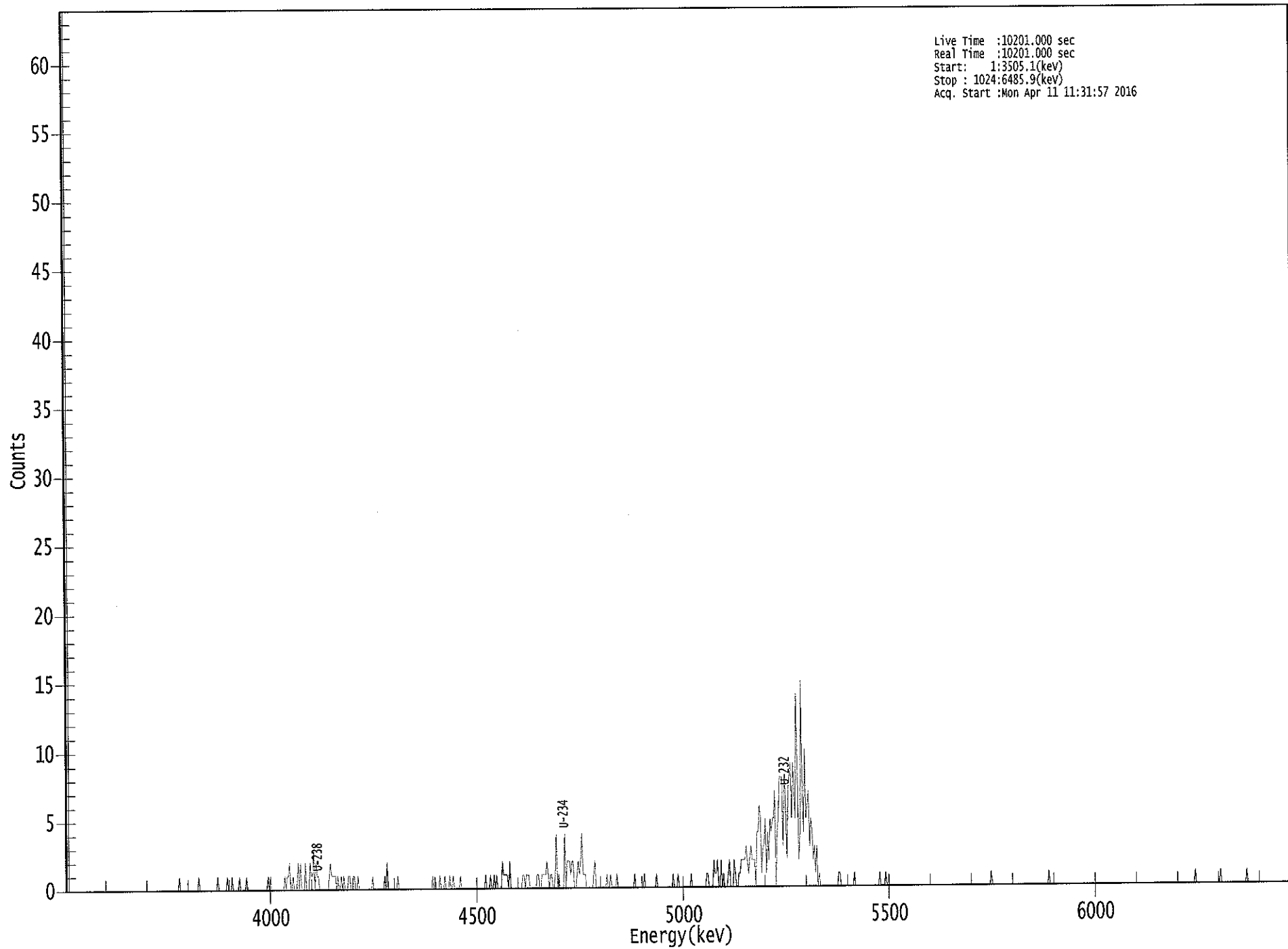
T = Tracer Peak used for Effective Efficiency

----- ----- NUCLIDE ANALYSIS RESULTS ----- -----						
Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)		MDA (pCi/gram)	
U-232	0.981	5302.50*	4.99E+000	+/- 6.19E-001	1.41E-001	+/- 1.75E-002
U-234	0.985	4761.50*	9.29E-001	+/- 2.78E-001	1.34E-001	+/- 1.66E-002
U-235	0.996	4385.50*	1.55E-001	+/- 1.20E-001	1.20E-001	+/- 1.49E-002
U-238	0.969	4184.40*	6.80E-001	+/- 2.29E-001	8.19E-002	+/- 1.02E-002

AG
4/11/16

: 00104

0000148261.CNF



Live Time : 10201.000 sec
Real Time : 10201.000 sec
Start : 1:3505.1(kev)
Stop : 1024:6485.9(kev)
Acq. Start : Mon Apr 11 11:31:57 2016

ROI Type: 1

ROI Type: 3

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: 06

Elapsed Live time: 10201

Elapsed Real Time: 10201

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	10201	10201	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	1	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	1	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	1	0
129:	0	0	0	0	0	0	1	0
137:	0	0	1	0	0	0	0	0
145:	1	0	0	0	0	0	1	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	1	0	1	0	0	0	0	0
177:	0	0	0	0	0	0	1	0
185:	1	1	2	0	0	1	0	0
193:	0	2	0	2	0	0	0	2
201:	0	0	0	2	1	1	3	0
209:	2	1	1	0	0	0	0	0
217:	0	0	0	1	2	1	1	1
225:	1	0	1	0	0	1	0	1
233:	0	0	0	1	1	0	0	1
241:	1	0	0	1	0	0	0	0
249:	0	0	0	0	0	0	0	1
257:	0	0	0	0	0	0	0	0
265:	0	1	0	2	0	0	0	0
273:	0	0	0	0	1	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	1	0	1	0	0	0	1
313:	0	0	0	1	0	0	0	1
321:	0	0	1	0	0	0	0	0
329:	1	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	1	0	0
353:	0	1	0	0	1	0	1	0
361:	0	0	0	2	1	1	1	1

369: 0 2 0 0 0 0 0 0

Sample Title: 06

Channel	-----	-----	-----	-----	-----	-----	-----
377:	0	0	0	0	1	1	0
385:	1	1	0	0	0	0	0
393:	1	1	0	0	1	1	1
401:	2	1	0	1	1	0	0
409:	4	0	1	0	0	0	0
417:	0	2	2	2	1	2	2
425:	0	1	2	1	2	4	1
433:	1	0	0	0	0	0	0
441:	2	0	0	0	0	0	0
449:	0	0	1	0	0	1	0
457:	0	0	1	0	0	0	0
465:	0	0	0	0	0	0	0
473:	0	1	0	0	0	0	0
481:	0	1	0	0	0	0	0
489:	0	0	0	1	0	0	0
497:	0	0	0	0	0	0	0
505:	0	1	0	0	0	1	0
513:	0	0	0	0	0	0	0
521:	1	0	0	0	0	0	0
529:	0	0	0	0	0	1	1
537:	0	0	0	2	1	1	2
545:	0	2	0	1	0	0	0
553:	2	0	0	0	2	1	0
561:	1	1	2	2	2	2	3
569:	1	2	3	2	2	2	0
577:	4	6	5	1	3	3	5
585:	4	2	5	4	5	5	7
593:	4	5	8	8	8	3	8
601:	2	7	8	9	5	9	7
609:	14	8	2	4	15	7	4
617:	5	6	7	3	5	4	2
625:	1	3	0	1	0	0	0
633:	0	0	0	0	0	0	0
641:	0	0	0	1	1	0	0
649:	0	0	0	0	0	0	0
657:	1	0	0	0	0	0	0
665:	0	0	0	0	0	0	0
673:	0	0	0	0	0	1	0
681:	0	0	1	0	0	0	0
689:	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0
737:	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0
769:	0	0	1	0	0	0	0
777:	0	0	0	0	0	0	0
785:	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0

801: 0 0 0 0 0 0 0 0

Sample Title: 06

Channel	-----	-----	-----	-----	-----	-----	-----
809:	0	0	0	0	0	0	0
817:	0	0	1	0	0	0	0
825:	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0
873:	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0
937:	0	0	0	0	1	0	0
945:	0	0	0	0	0	0	0
953:	0	0	0	0	0	0	0
961:	0	1	0	0	0	0	0
969:	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	1
985:	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0



QA SUMMARY REPORT

Review Of QA Results - Pulser Check

Date : 4/11/2016
Time : 5:38:58 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha 001	21f	ALL	Not Done	
Alpha 002	21f	ALL	Not Done	
Alpha 003	21f	ALL	Passed	4/11/2016 5:09:37 AM
Alpha 004	21f	ALL	Passed	4/11/2016 5:09:38 AM
Alpha 005	21f	ALL	Not Done	
Alpha 006	21f	ALL	Not Done	
Alpha 007	21f	ALL	Not Done	
Alpha 008	21f	ALL	Not Done	
Alpha 009	21f	ALL	Not Done	
Alpha 010	21f	ALL	Passed	4/11/2016 5:09:39 AM
Alpha 011	21f	ALL	Passed	4/11/2016 5:09:40 AM
Alpha 012	21f	ALL	Passed	4/11/2016 5:09:40 AM
Alpha 013	21f	ALL	Not Done	
Alpha 014	21f	ALL	Passed	4/11/2016 5:09:41 AM
Alpha 015	21f	ALL	Passed	4/11/2016 5:09:42 AM
Alpha 016	21f	ALL	Not Done	
Alpha 033	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:09:43 AM
Alpha 034	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:09:45 AM
Alpha 035	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:09:47 AM
Alpha 036	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:09:48 AM
Alpha 037	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:09:51 AM
Alpha 038	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:09:53 AM
Alpha 039	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:09:55 AM
Alpha 040	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:09:57 AM
Alpha 041	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:09:59 AM
Alpha 042	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:02 AM
Alpha 043	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:04 AM
Alpha 044	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:07 AM
Alpha 045	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:09 AM
Alpha 046	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:12 AM
Alpha 047	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:15 AM
Alpha 048	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:18 AM
Alpha 049	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:20 AM
Alpha 050	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:23 AM
Alpha 051	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:08 AM
Alpha 052	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:26 AM
Alpha 053	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:28 AM
Alpha 054	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:31 AM
Alpha 055	Alpha Analyst100DC	Peak FWHM <i>OK</i>	Action	4/11/2016 5:10:33 AM
Alpha 056	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:36 AM
Alpha 057	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:39 AM
Alpha 058	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:42 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha_059	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:45 AM
Alpha_060	Alpha Analyst100DC	ALL	Passed	4/11/2016 5:10:48 AM

APPROVED BY: CAPPROVAL DATE: 4/11/16

***** LIBRARY LISTING REPORT *****

Nuclide Library Title: Uranium

Nuclide Library Description: U-232, -234, -235, -238

Nuclide Name	Half-Life (Seconds)	Energy (keV)	Energy Uncert. (keV)	Yield (%)	Yield Uncert. (Abs.+--)
U-232	2.174E+009	5302.500*	0.000	99.8000	0.0000
U-234	7.731E+012	4761.500*	0.000	99.8000	0.0000
U-235	2.221E+016	4385.500*	0.000	80.9000	0.0000
U-238	1.410E+017	4184.400*	0.000	100.2300	0.0000

* = key line

TOTALS: 4 Nuclides 4 Energy Lines

SECTION IX
ANALYTICAL DATA (ISOTOPIC THORIUM)

16-03102

ThISO

Run 1

Work Order	16-03102	Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
Analysis Code	ThISO	01	LCS	LCS		03/22/16 00:00	1.0000E+00
Run	1	02	MBL	BLANK		03/22/16 00:00	1.0000E+00
Date Received	3/21/2016	03	DUP	SEDIMENT 2016-03-16A	36	03/16/16 13:35	9.9700E-01
Lab Deadline	4/12/2016	04	DO	SEDIMENT 2016-03-16A	36	03/16/16 13:35	1.0102E+00
Client	Auxier & Associates, Inc.	05	TRG	SEDIMENT 2016-03-16B	38	03/16/16 13:55	1.0085E+00
Project	WESTLAKE NCC	06	TRG	SEDIMENT 2016-03-16B DUP	34	03/16/16 13:55	1.0126E+00
Report Level	4						
Activity Units	pCi						
Aliquot Units	g						
Matrix	SO						
Method	EML Th-01 Modified						
Instrument Type	Alpha Spectroscopy						
Radiometric Tracer	Th-229						
Radiometric Sol#	Th-18a						
Tracer Act (dpm/g)	22.46						
Carrier							
Carrier Conc (mg/ml)							

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.

** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

16-03102

[illegible]

** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

[illegible]

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
 ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

[illegible]

[illegible]

[illegible]

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34-37

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c-99 MS	c-2a	22043.636	7/5/2014	0.1
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<i>Comments</i>	
<i>Special Codes</i>	H: Hot, O: Organic Hazard, P: PCB Hazard, R: Rush, T: Other (see comments)

Analysis: ThISO Page No. 9578

[illegible]

100
4/8/16

Sample Description: SPIKE
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001480
Batch Identification: 1603102A-TH
Sample Identification: 01
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_034
Chamber Serial Number: 04026479B
Detector Serial Number: 91136
Env. Background: System Bkgd 149228
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 4/8/2016 6:14:10 AM
Acquisition Date/Time: 4/8/2016 2:44:53 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.465 mL
Effective Efficiency: 0.2143 +/- 0.0128
Counting Efficiency: 0.1772 +/- 0.0031 on 12/11/2015 8:20:57 AM
Chem. Recovery Factor: 1.2093 +/- 0.0755

Control Certificate Name: NatTh_Th-8
Chem. Recov. of Control: TH-232 0.999046 +/- 0.084045
Peak Match Tolerance: 0.175 MeV

----- ----- PEAK AREA REPORT ----- -----						
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-227	5.797	22.66	41.53	0.34	0.00E+000	3.0
TH-228	5.366	430.15	9.46	0.85	0.00E+000	11.0
TH-229 T	4.873	380.83	10.05	0.17	0.00E+000	6.0
TH-230	4.626	494.66	8.82	0.34	0.00E+000	9.2
TH-232	3.952	386.66	9.97	0.34	0.00E+000	6.1

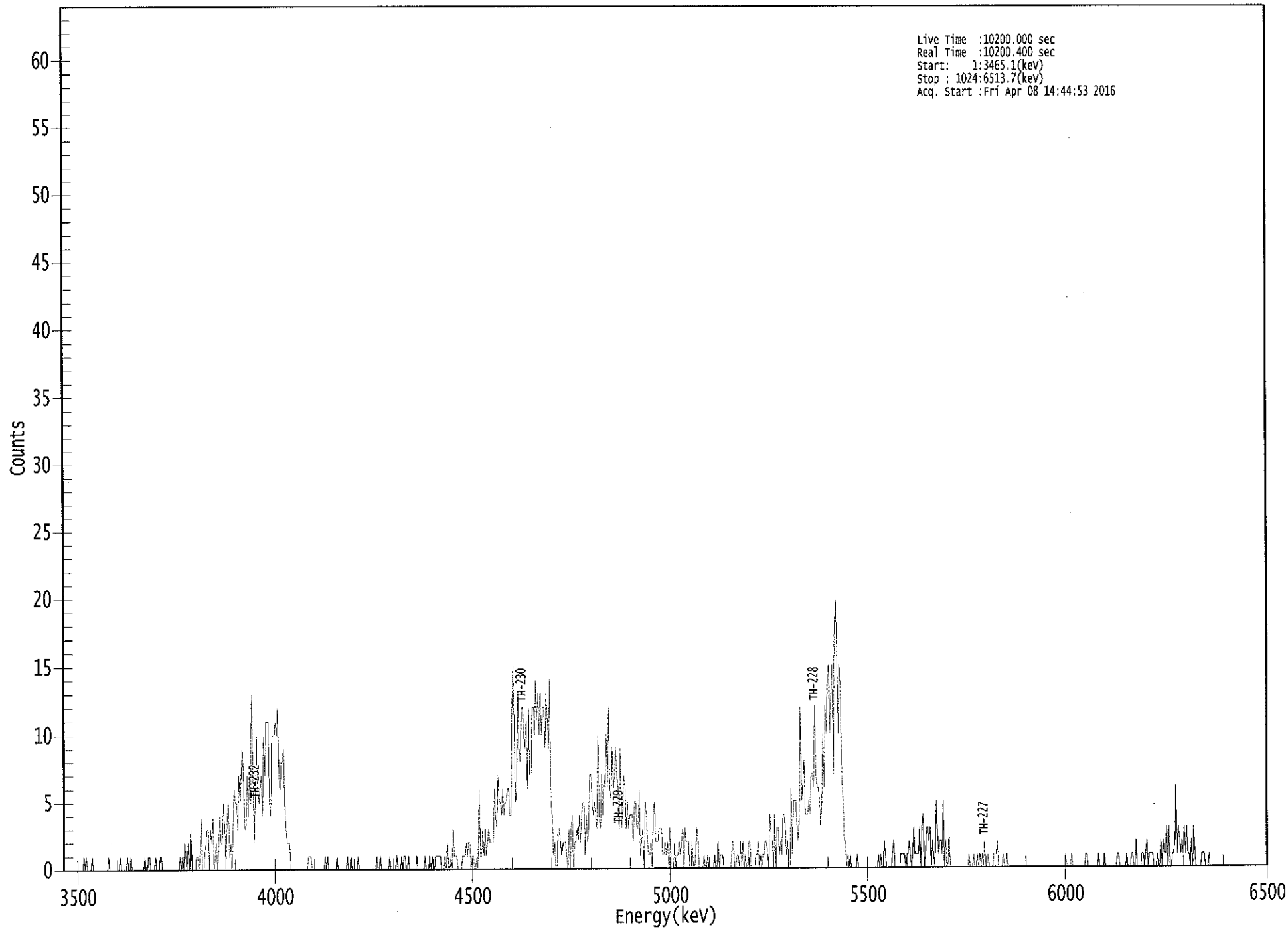
T = Tracer Peak used for Effective Efficiency

----- ----- NUCLIDE ANALYSIS RESULTS ----- -----						
Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)		MDA (pCi/gram)	
TH-227	0.985	5850.00*	2.87E-001	+/- 1.24E-001	6.06E-002	+/- 7.12E-003
TH-228	0.994	5400.00*	5.32E+000	+/- 8.03E-001	7.41E-002	+/- 8.70E-003
TH-229	1.000	4872.00*	4.73E+000	+/- 5.56E-001	5.19E-002	+/- 6.09E-003
TH-230	0.989	4672.00*	6.13E+000	+/- 9.00E-001	5.92E-002	+/- 6.95E-003
TH-232	0.989	3997.00*	4.78E+000	+/- 7.37E-001	5.91E-002	+/- 6.94E-003

Ag
4/11/16

0000148086.CNF

Live Time :10200.000 sec
Real Time :10200.400 sec
Start: 1:3465.1(kev)
Stop : 1024:6513.7(kev)
Acq. Start :Fri Apr 08 14:44:53 2016



557500 :

ROI Type:1

ROI Type: 3

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: 01

Elapsed Live time: 10200

Elapsed Real Time: 10200

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	1	0	1	0	0	0	0
25:	1	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	1	0
41:	0	0	0	0	0	0	0	0
49:	1	0	0	0	0	0	1	0
57:	0	1	0	0	0	0	0	0
65:	0	0	0	0	0	1	0	0
73:	1	1	0	0	0	0	1	0
81:	0	0	1	1	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	1	0	1	0	2
105:	1	0	2	0	3	0	0	0
113:	0	1	1	0	1	4	0	0
121:	1	2	3	3	0	3	2	4
129:	0	1	2	0	2	4	2	2
137:	5	3	0	4	5	1	2	0
145:	3	6	5	5	3	7	5	7
153:	9	7	3	3	7	4	7	5
161:	13	8	2	5	10	6	5	6
169:	7	4	10	7	11	11	11	5
177:	4	10	10	10	11	10	12	7
185:	6	8	8	9	5	3	2	2
193:	2	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	1	1	1	0	0	0	0	0
217:	0	0	0	0	0	0	1	0
225:	1	0	0	0	0	0	0	0
233:	1	0	0	0	0	0	0	0
241:	0	1	0	0	1	0	0	0
249:	0	0	1	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	1	0	0	1	0	0
273:	0	0	0	0	0	1	0	0
281:	0	0	0	1	0	0	0	1
289:	0	1	1	0	0	1	0	0
297:	0	0	0	0	1	0	0	0
305:	0	0	0	1	0	0	0	1
313:	0	1	0	0	1	1	1	1
321:	1	0	0	0	1	0	2	0
329:	0	1	0	3	1	1	1	0
337:	0	0	0	1	1	1	2	1
345:	2	2	0	1	1	0	0	1
353:	0	6	1	1	3	1	3	1
361:	2	3	2	2	2	2	6	4

369: 3 7 5 5 4 6 4 5

Sample Title: 01

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	5	6	6	4	4	11	15	11
385:	5	6	13	9	8	12	12	10
393:	9	11	6	12	7	7	12	12
401:	10	14	11	13	10	13	10	12
409:	12	9	13	11	9	14	5	4
417:	1	2	0	0	3	3	2	1
425:	2	2	2	1	0	3	0	3
433:	4	0	2	2	3	2	4	2
441:	4	5	5	1	4	2	3	7
449:	7	5	4	5	4	3	10	4
457:	3	7	4	7	6	10	6	12
465:	6	5	9	6	7	9	7	6
473:	3	9	3	4	7	6	3	5
481:	3	4	4	4	2	5	5	3
489:	3	6	1	2	3	0	5	4
497:	2	1	1	2	0	4	5	2
505:	2	2	3	3	3	1	1	2
513:	1	2	0	3	0	0	0	2
521:	0	1	1	2	1	2	3	0
529:	3	2	2	2	0	0	2	0
537:	0	1	3	2	0	0	0	0
545:	1	0	0	1	0	0	0	0
553:	0	1	0	0	2	0	1	1
561:	1	0	0	0	0	0	0	0
569:	2	2	0	0	1	1	0	2
577:	0	2	0	1	0	0	2	2
585:	0	0	0	0	1	1	2	0
593:	1	0	1	1	2	2	1	0
601:	4	2	2	0	4	0	3	3
609:	1	2	1	4	4	3	1	2
617:	0	0	6	1	5	5	5	3
625:	2	4	12	5	6	8	4	4
633:	4	5	4	7	7	6	12	7
641:	6	6	5	3	5	10	6	12
649:	10	14	15	10	13	15	7	17
657:	20	17	10	15	13	7	5	2
665:	2	0	1	0	1	0	0	0
673:	0	0	1	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	1	0	1	0
697:	0	2	1	0	0	0	0	0
705:	1	2	0	0	0	0	0	1
713:	1	1	1	0	1	1	2	1
721:	0	1	3	1	1	1	1	3
729:	0	3	4	0	1	3	3	2
737:	3	0	2	1	0	5	3	1
745:	2	2	1	5	0	2	1	0
753:	3	0	0	0	0	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	1	0	0	0	1	0	0
777:	1	0	1	0	1	0	2	0
785:	0	1	0	0	0	0	1	1
793:	1	2	0	0	0	0	1	0

801: 0 1 0 0 0 0 0 0

Sample Title: 01

Channel	-----	-----	-----	-----	-----	-----	-----
809:	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0
849:	0	0	0	1	0	0	0
857:	1	0	0	0	0	0	0
865:	0	0	0	0	1	1	0
873:	0	0	0	0	0	0	0
881:	0	0	0	0	1	0	0
889:	0	0	0	0	0	0	0
897:	1	0	0	0	0	0	0
905:	0	0	0	1	1	0	0
913:	0	0	0	0	1	1	0
921:	2	0	1	1	1	1	0
929:	0	1	0	0	2	0	2
937:	1	3	0	3	0	0	1
945:	2	6	1	3	2	1	2
953:	3	1	3	1	1	0	2
961:	3	1	0	0	0	0	0
969:	1	1	0	0	0	1	0
977:	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0



VB
4/8/16

Sample Description: BLANK
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001480
Batch Identification: 1603102A-TH
Sample Identification: 02
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_035
Chamber Serial Number: 04026477A
Detector Serial Number: 58771
Env. Background: System Bkgd 149229
Reagent Blank: <not performed>

Sample Size: 1.000E+000 +/- 0.000E+000 gram
Sample Date/Time: 4/8/2016 6:14:10 AM
Acquisition Date/Time: 4/8/2016 2:44:55 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.234 mL
Effective Efficiency: 0.2164 +/- 0.0170
Counting Efficiency: 0.1575 +/- 0.0028 on 12/11/2015 8:20:56 AM
Chem. Recovery Factor: 1.3736 +/- 0.1106

Peak Match Tolerance: 0.175 MeV

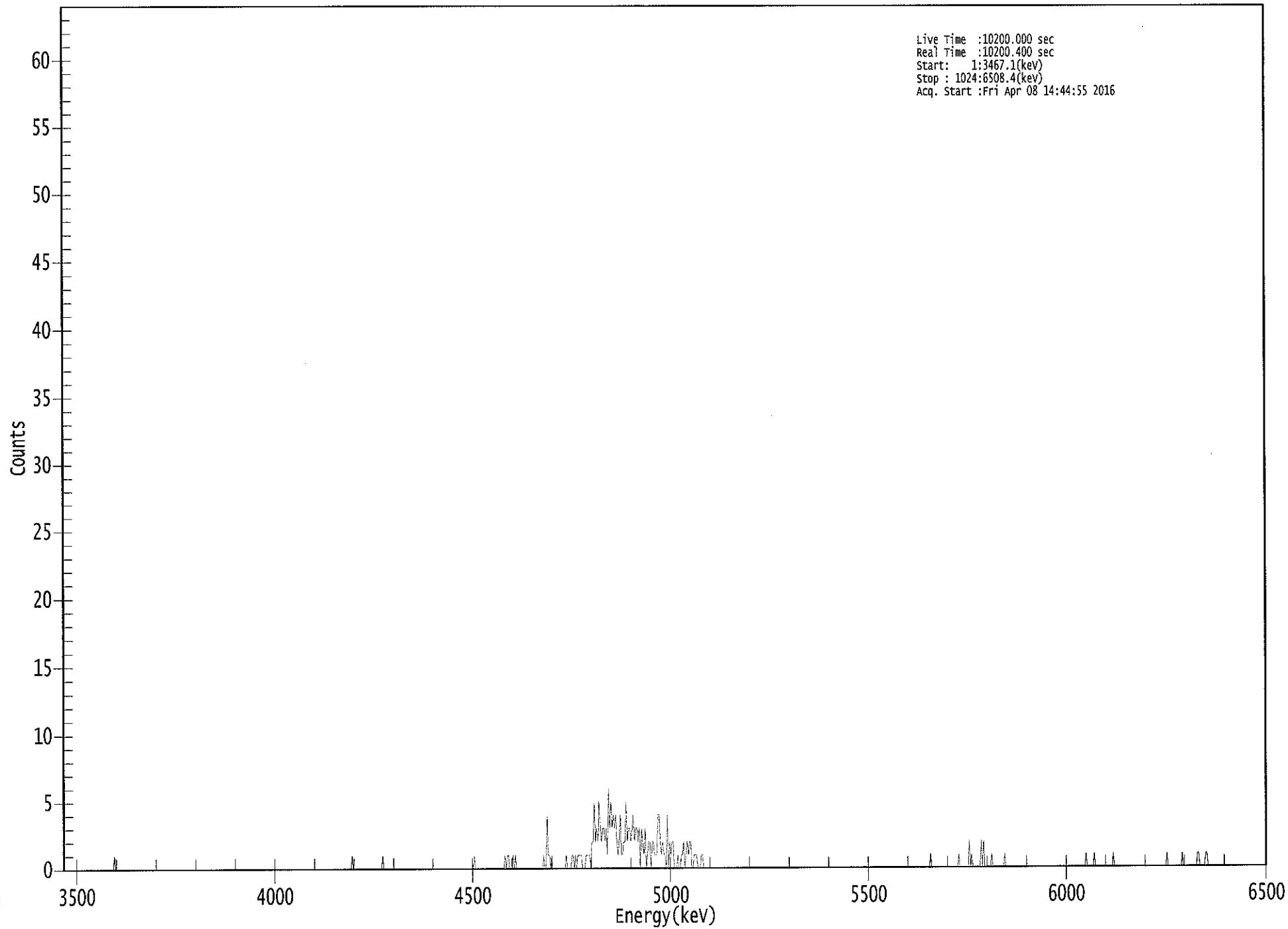
----- ----- PEAK AREA REPORT ----- -----						
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-227	5.782	9.15	68.23	0.85	0.00E+000	3.0
TH-228	5.298	-1.19	180.60	1.19	0.00E+000	0.0
TH-229 T	4.898	193.00	14.14	0.00	0.00E+000	4.8
TH-230	4.643	13.49	54.53	0.51	0.00E+000	3.5
TH-232	3.946	-0.34	592.90	0.34	0.00E+000	0.0

T = Tracer Peak used for Effective Efficiency

----- ----- NUCLIDE ANALYSIS RESULTS ----- -----						
Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)		MDA (pCi/gram)	
TH-227	0.976	5850.00*	1.15E-001	+/- 8.04E-002	7.52E-002	+/- 1.16E-002
TH-228	0.948	5400.00*	-1.46E-002	+/- 2.64E-002	8.07E-002	+/- 1.24E-002
TH-229	0.996	4872.00*	2.37E+000	+/- 3.66E-001	7.38E-002	+/- 1.14E-002
TH-230	0.996	4672.00*	1.65E-001	+/- 9.38E-002	6.44E-002	+/- 9.91E-003
TH-232	0.986	3997.00*	-4.16E-003	+/- 2.47E-002	5.85E-002	+/- 9.01E-003

AG
4/11/16

0000148082.CNF



ROI Type: 1

ROI Type: 3

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: 02

Elapsed Live time: 10200

Elapsed Real Time: 10200

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	1	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	0	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	0	0
137:	0	0	0	0	0	0	0	0
145:	0	0	0	0	0	0	0	0
153:	0	0	0	0	0	0	0	0
161:	0	0	0	0	0	0	0	0
169:	0	0	0	0	0	0	0	0
177:	0	0	0	0	0	0	0	0
185:	0	0	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	1	0	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	1
273:	0	0	0	0	0	0	0	0
281:	0	0	0	0	0	0	0	0
289:	0	0	0	0	0	0	0	0
297:	0	0	0	0	0	0	0	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	0	0	0	0	0	0	0
345:	0	0	0	0	0	1	0	0
353:	0	0	0	0	0	0	0	0
361:	0	0	0	0	0	0	0	0

369: 0 0 0 0 0 0 0 0 1

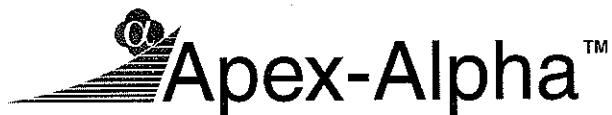
Sample Title: 02

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	0	1	1	0	0	0	1	0
385:	1	0	0	0	0	0	0	0
393:	0	0	0	0	0	0	0	0
401:	0	0	0	0	0	0	0	0
409:	1	0	0	4	1	1	0	1
417:	0	0	0	0	0	0	0	0
425:	0	0	0	1	0	0	0	0
433:	1	1	0	1	0	1	1	1
441:	1	0	0	0	1	1	1	1
449:	0	2	2	5	2	3	2	5
457:	3	2	3	3	2	3	1	6
465:	3	5	3	4	3	4	2	1
473:	2	4	1	1	2	2	5	2
481:	3	3	2	3	4	2	3	3
489:	2	3	0	3	2	1	3	0
497:	1	2	2	0	2	2	1	1
505:	1	4	4	2	1	2	1	1
513:	0	4	0	2	1	2	2	0
521:	0	0	1	0	0	1	1	2
529:	0	1	2	1	2	2	0	0
537:	1	1	1	0	0	0	1	1
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	0	0	0	0	0	0	0
617:	0	0	0	0	0	0	0	0
625:	0	0	0	0	0	0	0	0
633:	0	0	0	0	0	0	0	0
641:	0	0	0	0	0	0	0	0
649:	0	0	0	0	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	0	1	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	0	0	0
761:	0	1	0	0	0	0	0	0
769:	0	0	2	0	1	0	0	0
777:	0	0	0	0	2	0	2	0
785:	0	0	0	0	0	1	0	0
793:	0	0	0	0	0	0	0	0

801: 1 0 0 0 0 0 0 0

Sample Title: 02

Channel	-----	-----	-----	-----	-----	-----	-----
809:	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0
865:	0	0	0	0	0	1	0
873:	0	0	0	0	1	0	0
881:	0	0	0	0	0	0	0
889:	0	0	0	0	1	0	0
897:	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0
937:	0	0	1	0	0	0	0
945:	0	0	0	0	0	0	1
953:	0	0	0	0	0	0	0
961:	0	0	0	0	1	1	0
969:	0	0	0	1	1	0	0
977:	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0



KB
4/11/16

Sample Description: SEDIMENT 2016-03-16A-DUP
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001480
Batch Identification: 1603102A-TH
Sample Identification: 03
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_036
Chamber Serial Number: 04026477B
Detector Serial Number: 84167
Env. Background: System Bkgd 149230
Reagent Blank: <not performed>

Sample Size: 9.970E-001 +/- 0.000E+000 gram
Sample Date/Time: 3/16/2016 6:14:10 AM
Acquisition Date/Time: 4/8/2016 2:44:57 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.233 mL
Effective Efficiency: 0.1736 +/- 0.0150
Counting Efficiency: 0.1870 +/- 0.0033 on 12/11/2015 8:20:54 AM
Chem. Recovery Factor: 0.9284 +/- 0.0821

Peak Match Tolerance: 0.175 MeV

----- ----- PEAK AREA REPORT ----- -----						
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-227	5.832	19.79	46.85	2.21	0.00E+000	3.0
TH-228	5.376	67.79	24.26	2.21	0.00E+000	4.9
TH-229 T	4.882	154.47	15.86	1.53	0.00E+000	4.7
TH-230	4.643	544.98	8.41	1.02	0.00E+000	24.1
TH-232	3.967	71.00	23.42	0.00	0.00E+000	4.4

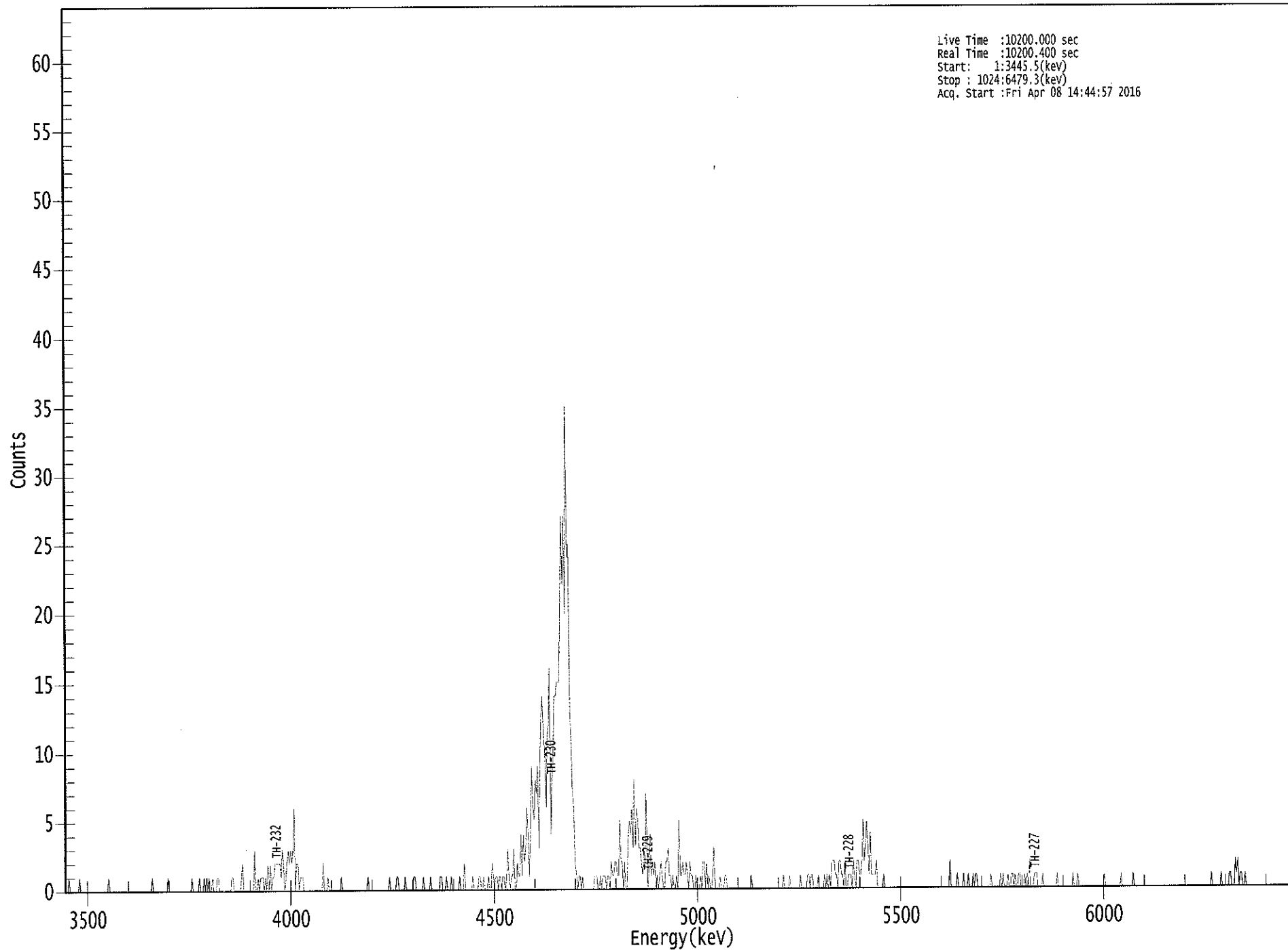
T = Tracer Peak used for Effective Efficiency

----- ----- NUCLIDE ANALYSIS RESULTS ----- -----						
Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)		MDA (pCi/gram)	
TH-227	0.998	5850.00*	3.11E-001	+/- 1.55E-001	1.26E-001	+/- 2.14E-002
TH-228	0.997	5400.00*	1.06E+000	+/- 3.15E-001	1.25E-001	+/- 2.13E-002
TH-229	0.999	4872.00*	2.38E+000	+/- 4.04E-001	1.09E-001	+/- 1.86E-002
TH-230	0.996	4672.00*	8.36E+000	+/- 1.58E+000	9.66E-002	+/- 1.64E-002
TH-232	0.995	3997.00*	1.09E+000	+/- 3.14E-001	9.18E-002	+/- 1.56E-002

AG
4/11/16

0000148083.CNF

Live Time :10200.000 sec
Real Time :10200.400 sec
Start: 1:3445.5(kev)
Stop : 1024:6479.3(kev)
Acq. Start :Fri Apr 08 14:44:57 2016



CH1500:

ROI Type: 1

ROI Type: 3

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: 03

Elapsed Live time: 10200

Elapsed Real Time: 10200

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	1	0	0	0	0
9:	0	0	0	0	1	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	1	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	1	0	0	0	0	0	0	0
81:	0	0	0	0	0	1	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	1	0	0	0	0	0	1
113:	0	0	0	1	0	1	0	1
121:	0	0	1	0	0	0	1	1
129:	0	0	0	0	0	0	0	0
137:	0	0	1	1	0	0	0	0
145:	0	0	1	2	0	0	0	0
153:	0	0	0	0	0	3	0	0
161:	1	0	1	1	1	0	1	0
169:	2	0	2	0	1	1	2	2
177:	2	2	2	1	3	2	0	1
185:	2	3	2	3	2	3	6	0
193:	2	2	0	1	1	1	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	2	0
217:	0	0	1	0	0	0	0	0
225:	0	0	0	0	0	1	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	0	1	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	1	0	0
273:	0	0	0	1	1	0	0	0
281:	0	0	1	0	0	0	0	0
289:	0	1	1	0	0	0	0	0
297:	0	1	0	0	0	0	0	1
305:	0	0	0	0	0	0	0	1
313:	1	0	0	0	1	0	0	0
321:	1	0	0	0	0	0	0	1
329:	0	0	0	2	0	0	0	0
337:	0	0	1	0	0	0	0	1
345:	1	0	0	1	0	0	0	1
353:	0	0	2	1	0	1	1	0
361:	1	1	0	1	1	0	1	3

369: 1 0 1 1 3 0 0 2

Sample Title: 03

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	1	1	4	1	4	2	3	6
385:	4	1	4	9	6	5	8	7
393:	9	3	9	13	14	11	10	6
401:	11	12	16	4	8	10	14	14
409:	15	15	15	20	27	22	27	20
417:	35	24	25	13	11	7	6	2
425:	1	0	1	1	0	1	0	0
433:	0	0	0	0	0	0	0	1
441:	1	1	0	0	1	0	1	1
449:	1	0	1	1	0	2	1	1
457:	2	2	1	1	5	2	2	0
465:	2	0	0	4	5	4	6	3
473:	8	3	6	5	3	3	2	1
481:	3	2	7	0	1	4	1	2
489:	1	2	0	1	0	1	2	1
497:	0	0	2	2	3	1	1	0
505:	1	0	0	1	0	5	1	1
513:	2	1	1	2	1	0	2	1
521:	1	0	0	1	0	0	0	1
529:	0	2	2	0	2	0	1	0
537:	0	1	3	0	0	0	0	1
545:	0	0	0	1	1	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	1	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	0	0
593:	0	0	0	0	1	0	0	0
601:	0	1	0	0	0	0	0	0
609:	0	0	1	0	0	0	0	0
617:	1	1	0	1	1	0	0	0
625:	0	1	0	0	0	0	1	0
633:	1	0	1	0	2	2	2	1
641:	1	0	2	2	1	1	0	2
649:	0	0	1	1	1	0	2	1
657:	0	2	2	1	1	2	5	2
665:	3	5	3	1	4	1	1	1
673:	1	2	0	0	0	0	0	1
681:	0	0	0	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	2	0
737:	0	0	0	0	1	0	0	0
745:	0	1	0	0	0	1	0	0
753:	0	1	0	1	1	0	0	0
761:	0	0	0	0	0	0	0	0
769:	1	0	0	0	0	0	0	0
777:	1	0	1	0	0	0	1	0
785:	0	1	1	0	1	0	0	1
793:	1	0	0	0	1	0	1	0

801: 2 0 0 0 1 1 1 0

Sample Title: 03

Channel	-----	-----	-----	-----	-----	-----	-----	-----
809:	0	0	0	1	0	0	0	0
817:	0	0	0	0	0	0	0	1
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	1	0	0	0
841:	1	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	1	0
865:	0	0	0	0	0	0	0	0
873:	0	0	0	0	1	0	0	0
881:	0	0	0	0	0	0	1	0
889:	0	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	0	0
945:	0	0	0	0	0	0	0	1
953:	0	0	0	0	0	0	0	1
961:	0	0	0	0	0	0	1	1
969:	0	0	0	2	1	2	0	1
977:	1	0	0	1	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0



105
4/13/16

Sample Description: SEDIMENT 2016-03-16A
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001480
Batch Identification: 1603102A-TH
Sample Identification: 04
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_037
Chamber Serial Number: 04026478A
Detector Serial Number: 91133
Env. Background: System Bkgd 149231
Reagent Blank: <not performed>

Sample Size: 1.010E+000 +/- 0.000E+000 gram
Sample Date/Time: 3/16/2016 6:14:10 AM
Acquisition Date/Time: 4/8/2016 2:44:59 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.233 mL
Effective Efficiency: 0.2161 +/- 0.0170
Counting Efficiency: 0.1645 +/- 0.0029 on 12/11/2015 8:20:53 AM
Chem. Recovery Factor: 1.3136 +/- 0.1060

Peak Match Tolerance: 0.175 MeV

----- ----- PEAK AREA REPORT ----- -----						
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-227	5.882	15.66	50.15	0.34	0.00E+000	3.0
TH-228	5.383	54.47	26.99	1.53	0.00E+000	5.0
TH-229 T	4.893	192.00	14.18	0.00	0.00E+000	3.9
TH-230	4.655	574.32	8.18	0.68	0.00E+000	14.2
TH-232	3.976	67.49	23.96	0.51	0.00E+000	18.1

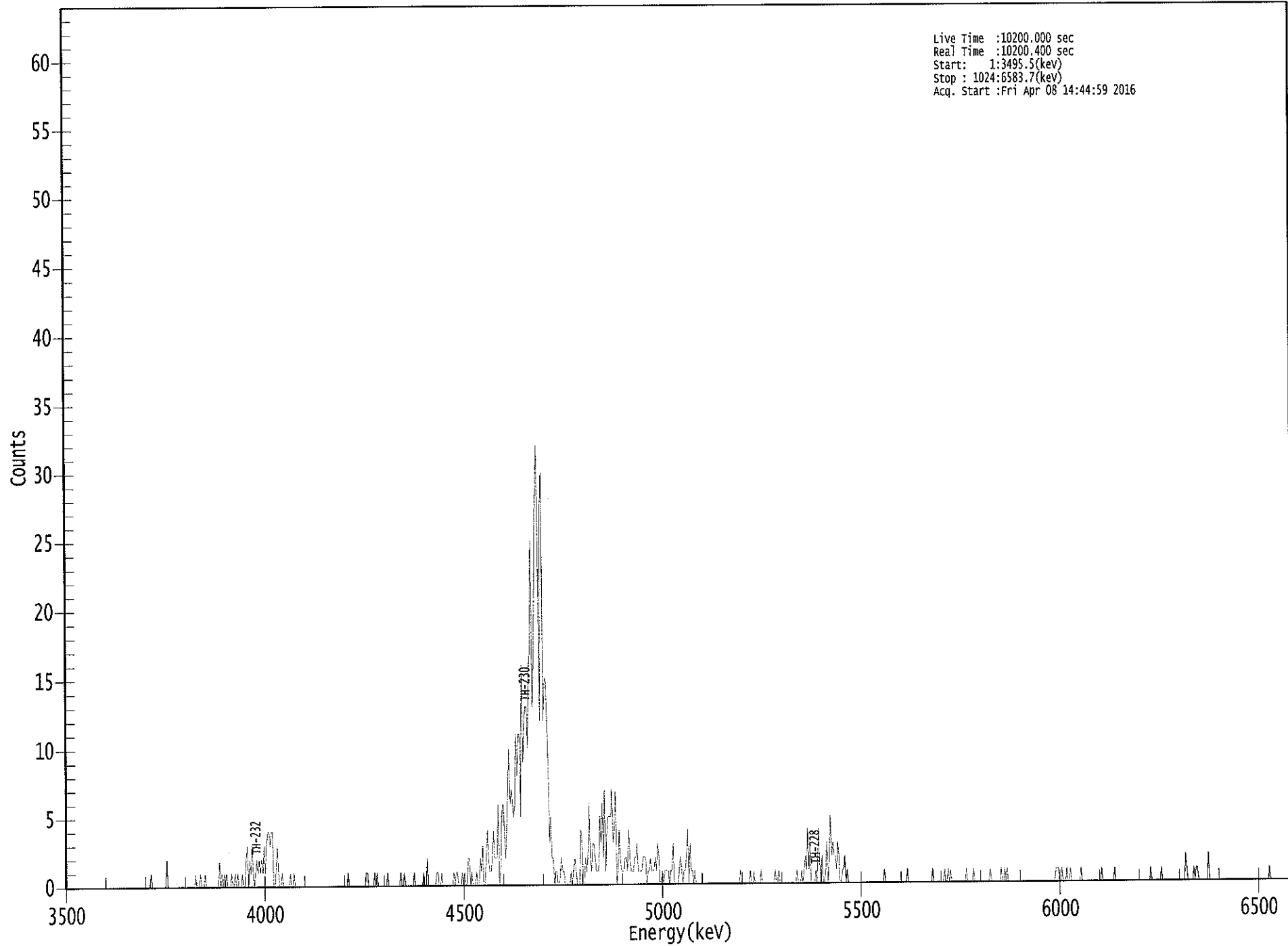
T = Tracer Peak used for Effective Efficiency

----- ----- NUCLIDE ANALYSIS RESULTS ----- -----						
Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)		MDA (pCi/gram)	
TH-227	0.995	5850.00*	1.95E-001	+/- 1.03E-001	5.96E-002	+/- 9.20E-003
TH-228	0.998	5400.00*	6.77E-001	+/- 2.10E-001	8.84E-002	+/- 1.36E-002
TH-229	0.998	4872.00*	2.34E+000	+/- 3.61E-001	7.31E-002	+/- 1.13E-002
TH-230	0.998	4672.00*	6.98E+000	+/- 1.22E+000	6.86E-002	+/- 1.06E-002
TH-232	0.998	3997.00*	8.19E-001	+/- 2.33E-001	6.37E-002	+/- 9.83E-003

AG
4/11/16

0000148085.CNF

Live Time :10200.000 sec
Real Time :10200.400 sec
Start: 1:3495.5(kev)
Stop : 1024:6583.7(kev)
Acq. Start :Fri Apr 08 14:44:59 2016



0000148085.CNF

ROI Type: 1

ROI Type: 3

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: 04

Elapsed Live time: 10200

Elapsed Real Time: 10200

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	0	0	0
41:	0	0	0	0	0	0	0	0
49:	0	0	0	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	1
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	2	0	0	0
89:	0	0	0	0	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	1	0	0	0
113:	1	0	0	0	1	0	0	0
121:	0	0	0	0	0	0	0	0
129:	2	0	1	0	1	0	1	0
137:	0	0	1	0	0	1	0	1
145:	0	0	0	1	0	0	2	3
153:	0	2	1	3	1	0	1	2
161:	1	2	1	2	1	3	1	3
169:	4	4	3	4	4	0	0	1
177:	3	1	0	0	1	0	0	0
185:	0	0	0	1	0	0	1	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	0	0	0	0
233:	0	0	0	1	0	0	0	0
241:	0	0	0	0	0	0	0	0
249:	0	0	1	1	0	0	0	0
257:	0	1	0	1	0	0	0	0
265:	0	0	0	0	1	0	0	0
273:	0	0	0	0	0	0	0	1
281:	0	0	1	0	0	0	0	0
289:	0	0	1	0	0	0	0	0
297:	0	0	1	0	0	2	0	0
305:	0	0	0	0	0	1	1	0
313:	0	1	0	0	0	0	0	0
321:	0	0	0	1	0	1	1	0
329:	0	0	1	0	1	0	0	2
337:	2	0	1	0	0	0	1	0
345:	0	2	1	3	0	0	2	4
353:	2	1	1	2	4	2	2	2
361:	6	0	1	5	6	5	2	3

369: 7 10 6 7 6 5 6 11

Sample Title: 04

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	8	11	11	5	16	9	12	13
385:	13	10	16	17	25	13	16	22
393:	28	32	26	12	27	30	12	15
401:	15	12	9	3	5	2	2	0
409:	1	1	0	0	1	2	1	1
417:	0	0	0	0	0	1	0	1
425:	2	1	0	0	0	4	3	0
433:	0	2	1	2	6	2	1	3
441:	3	2	1	1	1	5	3	6
449:	2	7	1	4	5	5	5	7
457:	3	4	7	0	1	4	2	1
465:	1	1	2	2	1	4	2	1
473:	1	1	2	2	3	1	1	1
481:	1	2	2	2	0	1	1	2
489:	1	1	1	2	1	3	2	0
497:	0	1	0	1	1	1	1	0
505:	1	1	3	0	0	0	0	1
513:	2	1	0	1	1	2	4	0
521:	3	1	1	0	1	0	0	0
529:	0	0	0	0	0	0	0	0
537:	0	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	1	0	0	0	0	0
569:	0	0	1	0	0	1	0	0
577:	0	0	0	1	0	0	0	0
585:	0	0	0	0	0	0	0	1
593:	0	0	1	0	0	0	0	0
601:	0	0	0	0	0	0	0	0
609:	0	1	0	0	0	1	0	1
617:	2	1	4	1	3	0	0	0
625:	0	1	0	4	2	0	2	0
633:	0	1	3	0	2	5	2	3
641:	2	2	1	3	2	0	0	1
649:	1	2	0	1	0	0	0	0
657:	0	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	1	0	0	0	0	0
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	1	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	1	0	0	0	0	0
729:	0	0	0	0	1	0	0	1
737:	0	1	0	0	0	0	0	0
745:	0	0	0	0	0	0	1	0
753:	0	0	0	0	1	0	0	0
761:	0	0	0	0	0	0	0	0
769:	0	0	1	0	0	0	0	0
777:	0	0	0	1	0	0	1	0
785:	1	0	0	0	0	0	0	0
793:	0	0	0	0	0	0	0	0

801: 0 0 0 0 0 0 0 0

Sample Title: 04

Channel	-----	-----	-----	-----	-----	-----	-----
809:	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0
825:	0	1	1	1	0	0	1
833:	0	0	1	0	0	1	0
841:	0	0	0	0	0	0	1
849:	0	0	0	0	0	0	0
857:	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0
873:	0	0	1	0	0	0	0
881:	0	0	0	0	0	0	0
889:	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0
905:	1	0	0	0	0	0	0
913:	0	1	0	0	0	0	0
921:	0	0	0	0	0	0	0
929:	0	0	0	0	0	2	1
937:	0	0	0	0	1	0	1
945:	0	0	0	0	0	0	0
953:	2	0	0	0	0	0	0
961:	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0
1001:	0	0	0	1	0	0	0
1009:	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0



100
4/11/16

Sample Description: SEDIMENT 2016-03-16B
Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001480
Batch Identification: 1603102A-TH
Sample Identification: 05
Sample Geometry: Shelf 2
Procedure Description: Th iso

Detector Name: Alpha_038
Chamber Serial Number: 04026478B
Detector Serial Number: 91134
Env. Background: System Bkgd 149232
Reagent Blank: <not performed>

Sample Size: 1.008E+000 +/- 0.000E+000 gram
Sample Date/Time: 3/16/2016 6:14:10 AM
Acquisition Date/Time: 4/8/2016 2:45:01 PM
Acquisition Live Time: 170.0 minutes
Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
Tracer Quantity: 0.233 mL
Effective Efficiency: 0.1749 +/- 0.0151
Counting Efficiency: 0.1601 +/- 0.0028 on 12/11/2015 8:20:51 AM
Chem. Recovery Factor: 1.0929 +/- 0.0961

Peak Match Tolerance: 0.175 MeV

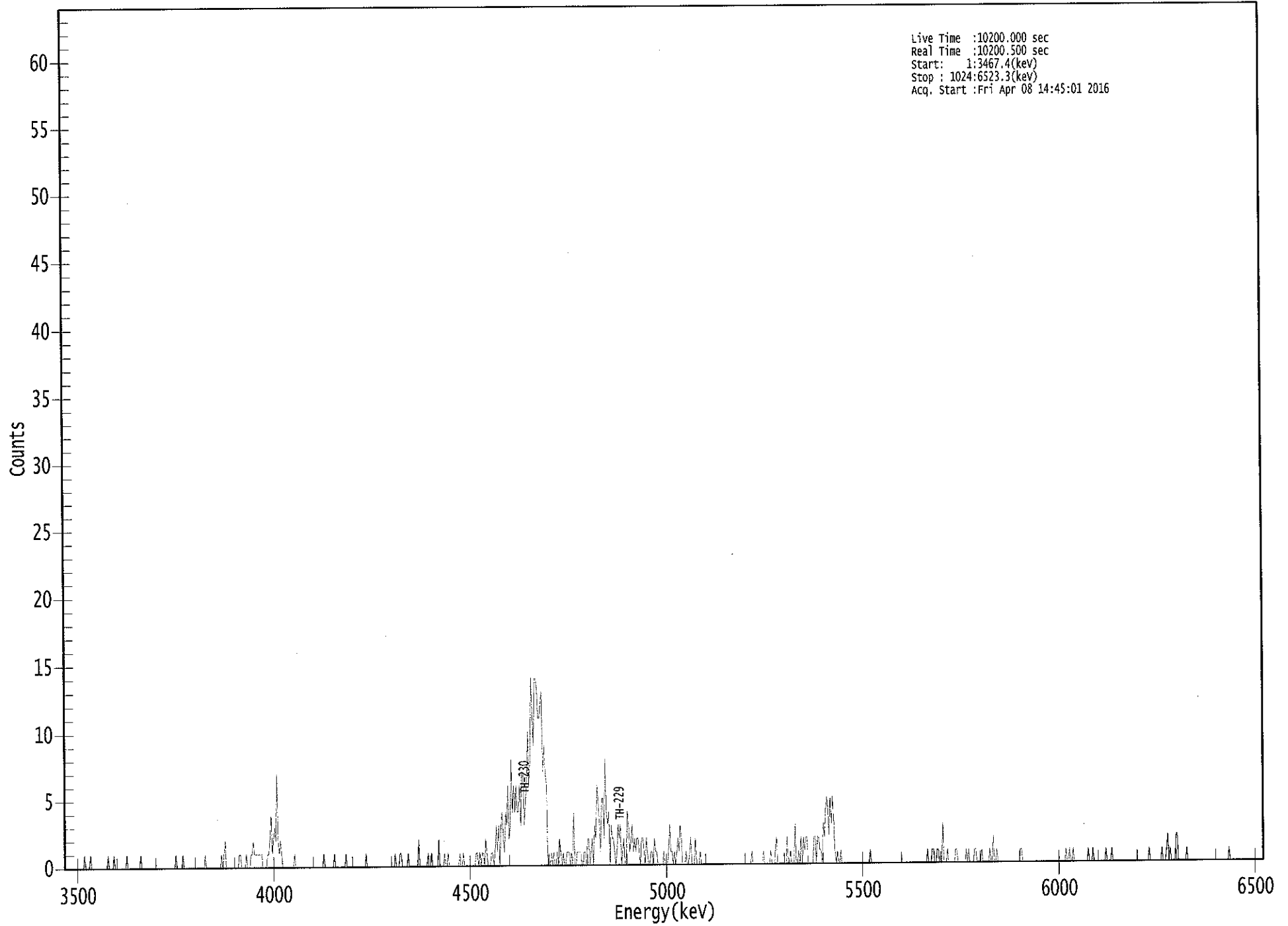
----- ----- PEAK AREA REPORT ----- -----						
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-227	5.822	19.66	44.65	0.34	0.00E+000	3.0
TH-228	5.381	70.32	23.50	0.68	0.00E+000	10.5
TH-229 T	4.883	155.49	15.75	0.51	0.00E+000	5.0
TH-230	4.643	301.32	11.31	0.68	0.00E+000	34.4
TH-232	3.974	49.00	28.28	0.00	0.00E+000	4.2

T = Tracer Peak used for Effective Efficiency

----- ----- NUCLIDE ANALYSIS RESULTS ----- -----						
Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)		MDA (pCi/gram)	
TH-227	0.996	5850.00*	3.03E-001	+/- 1.45E-001	7.38E-002	+/- 1.25E-002
TH-228	0.998	5400.00*	1.08E+000	+/- 3.13E-001	8.68E-002	+/- 1.46E-002
TH-229	0.999	4872.00*	2.35E+000	+/- 3.96E-001	7.92E-002	+/- 1.34E-002
TH-230	0.995	4672.00*	4.53E+000	+/- 9.21E-001	8.49E-002	+/- 1.43E-002
TH-232	0.997	3997.00*	7.36E-001	+/- 2.42E-001	9.01E-002	+/- 1.52E-002

AG
4/11/16

0000148084.CNF



Live Time :10200.000 sec
Real Time :10200.500 sec
Start: 1:3467.4(kev)
Stop : 1024:6523.3(kev)
Acq. Start :Fri Apr 08 14:45:01 2016

ROI Type: 1

ROI Type: 3

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: 05

Elapsed Live time: 10200

Elapsed Real Time: 10201

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	0	0	0	0
9:	0	0	0	0	0	0	0	0
17:	0	1	0	0	0	0	1	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	0	1	0	0
41:	0	0	1	0	0	0	0	0
49:	0	0	0	0	0	1	0	0
57:	0	0	0	0	0	0	0	0
65:	0	1	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	0	0	0	0	1
97:	0	0	0	0	0	1	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	0
121:	1	0	0	0	0	0	0	0
129:	0	0	0	0	0	0	1	0
137:	1	2	0	0	0	0	0	0
145:	0	0	0	0	0	1	1	0
153:	0	0	0	1	0	0	0	1
161:	1	2	1	1	1	1	1	1
169:	1	0	0	0	0	1	1	2
177:	4	1	2	3	2	7	2	1
185:	2	1	0	0	0	0	0	0
193:	0	0	0	0	1	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	1	0	0
225:	0	0	0	0	0	0	1	0
233:	0	0	0	0	0	0	0	0
241:	1	0	0	0	0	0	0	0
249:	0	0	0	0	0	0	0	0
257:	0	1	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	0
273:	0	0	0	0	0	0	0	0
281:	0	0	1	0	0	0	1	1
289:	0	0	0	0	0	1	0	0
297:	0	0	0	0	0	0	2	0
305:	0	0	0	0	0	0	1	0
313:	0	1	0	0	0	0	0	2
321:	0	0	0	0	1	0	0	1
329:	0	0	0	0	0	0	0	0
337:	0	1	0	0	1	0	0	0
345:	0	0	0	0	0	0	0	1
353:	1	0	1	0	1	1	0	2
361:	1	0	0	0	1	1	0	1

369: 3 1 3 0 3 4 2 1

Sample Title: 05

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	4	3	6	2	3	8	4	6
385:	4	6	4	4	6	3	7	7
393:	3	5	6	10	6	8	14	11
401:	9	14	14	13	11	11	12	13
409:	7	9	7	6	0	1	0	1
417:	0	1	0	0	1	0	2	1
425:	0	1	0	0	1	1	1	0
433:	1	0	4	0	0	1	1	1
441:	1	0	0	1	1	0	2	2
449:	0	1	2	0	3	2	6	5
457:	3	1	5	5	2	8	4	3
465:	4	0	3	2	2	1	0	1
473:	3	2	3	0	1	2	0	0
481:	4	3	1	2	3	1	2	1
489:	2	2	1	0	2	2	1	0
497:	2	1	0	0	1	1	0	2
505:	1	1	0	0	0	0	0	1
513:	0	0	0	1	3	1	1	0
521:	1	0	1	2	1	3	2	0
529:	0	0	1	0	0	1	2	0
537:	0	0	2	0	0	0	1	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	1	0	0	0	0	0
593:	0	0	0	0	1	0	0	0
601:	0	0	1	0	0	0	1	2
609:	0	0	0	0	0	0	0	0
617:	2	0	0	1	0	0	0	3
625:	0	0	1	0	2	0	2	1
633:	2	2	0	0	0	0	0	2
641:	2	0	2	2	1	1	0	3
649:	2	4	5	4	2	5	3	5
657:	3	1	0	1	0	0	1	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	0	0	0	1
689:	0	0	0	0	0	0	0	0
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	0	0	0	0	0
729:	0	0	0	0	0	0	0	0
737:	1	0	0	0	1	1	0	0
745:	1	1	0	0	0	3	0	0
753:	0	1	0	0	0	0	0	0
761:	1	1	0	0	0	0	0	0
769:	0	1	0	1	0	0	0	0
777:	1	1	0	0	0	0	1	0
785:	0	0	0	0	0	1	0	0
793:	2	0	0	1	0	0	0	0

801: 0 0 0 0 0 0 0 0

Sample Title: 05

Channel	-----	-----	-----	-----	-----	-----	-----	-----
809:	0	0	0	0	0	0	0	1
817:	1	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	0	0	0	0	0	1	0
857:	0	1	0	0	1	0	0	0
865:	0	0	0	0	0	0	0	0
873:	0	1	0	0	0	1	0	0
881:	0	0	0	0	0	0	0	0
889:	1	0	0	0	0	1	0	0
897:	0	0	0	0	0	0	0	0
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	0	0	0
921:	0	0	0	0	0	1	0	0
929:	0	0	0	0	0	0	0	0
937:	1	0	0	0	1	2	0	1
945:	0	0	0	0	2	2	0	0
953:	0	0	0	0	0	1	0	0
961:	0	0	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	1	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0



4/8/16

Sample Description: SEDIMENT 2016-03-16B DUP
 Spectrum File: \\OR-ALPHA1\Canberra\ApexAlpha\Root\Data\00001480
 Batch Identification: 1603102A-TH
 Sample Identification: 06
 Sample Geometry: Shelf 2
 Procedure Description: Th iso

Detector Name: Alpha_039
 Chamber Serial Number: 06027396A
 Detector Serial Number: 83109
 Env. Background: System Bkgd 149233
 Reagent Blank: <not performed>

Sample Size: 1.013E+000 +/- 0.000E+000 gram
 Sample Date/Time: 3/16/2016 6:14:10 AM
 Acquisition Date/Time: 4/8/2016 2:45:03 PM
 Acquisition Live Time: 170.0 minutes
 Acquisition Real Time: 170.0 minutes

Tracer Certificate: Th229_S_TH-18A
 Tracer Quantity: 0.233 mL
 Effective Efficiency: 0.1711 +/- 0.0150
 Counting Efficiency: 0.1862 +/- 0.0032 on 12/11/2015 8:20:49 AM
 Chem. Recovery Factor: 0.9189 +/- 0.0820

Peak Match Tolerance: 0.175 MeV

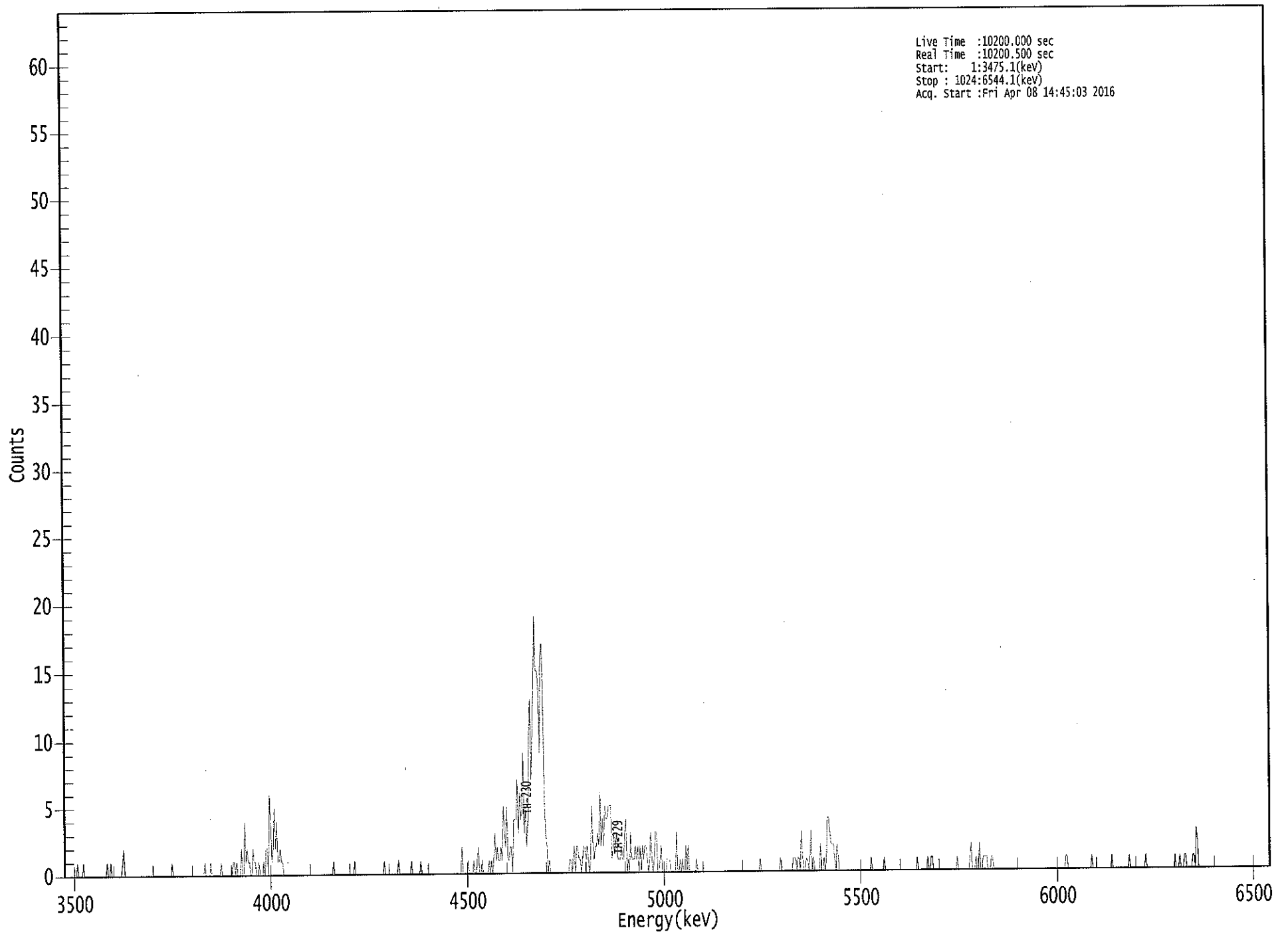
----- PEAK AREA REPORT -----						
Nuclide	Energy (MeV)	Net Pk Area	Pk Area Error %	Ambient Backgnd	Reagent Backgnd	FWHM (keV)
TH-227	5.832	12.79	60.09	2.21	0.00E+000	4.5
TH-228	5.390	39.43	32.83	3.57	0.00E+000	11.0
TH-229 T	4.885	152.45	16.03	2.55	0.00E+000	4.5
TH-230	4.654	286.30	11.62	1.70	0.00E+000	18.8
TH-232	3.975	54.96	27.01	2.04	0.00E+000	5.5

T = Tracer Peak used for Effective Efficiency

----- NUCLIDE ANALYSIS RESULTS -----						
Nuclide	Id Conf.	Energy (keV)	Activity (pCi/gram)		MDA (pCi/gram)	
TH-227	0.998	5850.00*	2.01E-001	+/- 1.26E-001	1.26E-001	+/- 2.15E-002
TH-228	0.999	5400.00*	6.18E-001	+/- 2.29E-001	1.48E-001	+/- 2.53E-002
TH-229	0.999	4872.00*	2.34E+000	+/- 4.02E-001	1.29E-001	+/- 2.21E-002
TH-230	0.998	4672.00*	4.39E+000	+/- 9.09E-001	1.13E-001	+/- 1.93E-002
TH-232	0.998	3997.00*	8.41E-001	+/- 2.69E-001	1.19E-001	+/- 2.04E-002

AG
4/11/16

0000148088.CNF



Live Time :10200.000 sec
Real Time :10200.500 sec
Start: 1:3475.1(kev)
Stop : 1024:6544.1(kev)
Acq. Start :Fri Apr 08 14:45:03 2016

ROI Type: 1

ROI Type: 3

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: 06

Elapsed Live time: 10200

Elapsed Real Time: 10201

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	0	0	0	0
9:	0	0	0	1	0	0	0	0
17:	1	0	0	0	0	0	0	0
25:	0	0	0	0	0	0	0	0
33:	0	0	0	0	1	0	0	1
41:	0	0	0	0	0	0	0	0
49:	0	1	2	0	0	0	0	0
57:	0	0	0	0	0	0	0	0
65:	0	0	0	0	0	0	0	0
73:	0	0	0	0	0	0	0	0
81:	0	0	0	0	0	0	0	0
89:	0	0	0	1	0	0	0	0
97:	0	0	0	0	0	0	0	0
105:	0	0	0	0	0	0	0	0
113:	0	0	0	0	0	0	0	1
121:	0	0	0	0	1	0	0	0
129:	0	0	0	0	0	1	0	0
137:	0	0	0	0	0	0	0	1
145:	1	0	1	0	0	0	2	0
153:	0	4	1	2	1	1	0	0
161:	2	1	1	0	0	1	0	0
169:	0	1	0	2	2	0	6	4
177:	1	2	5	2	4	1	1	2
185:	1	1	0	0	0	0	0	0
193:	0	0	0	0	0	0	0	0
201:	0	0	0	0	0	0	0	0
209:	0	0	0	0	0	0	0	0
217:	0	0	0	0	0	0	0	0
225:	0	0	0	0	1	0	0	0
233:	0	0	0	0	0	0	0	0
241:	0	0	0	0	0	0	1	0
249:	0	0	0	0	0	0	0	0
257:	0	0	0	0	0	0	0	0
265:	0	0	0	0	0	0	0	1
273:	0	0	0	0	0	0	0	0
281:	0	0	0	1	0	0	0	0
289:	0	0	0	0	0	0	1	0
297:	0	0	0	0	0	0	1	0
305:	0	0	0	0	0	0	0	0
313:	0	0	0	0	0	0	0	0
321:	0	0	0	0	0	0	0	0
329:	0	0	0	0	0	0	0	0
337:	0	2	0	0	0	0	1	0
345:	0	0	0	1	0	0	1	2
353:	0	0	1	0	0	0	0	0
361:	1	0	1	0	1	3	1	2

369: 1 1 2 1 5 3 2 5

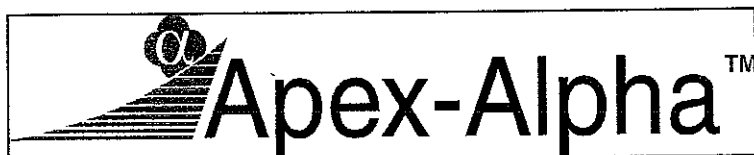
Sample Title: 06

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	1	1	2	2	0	4	4	4
385:	7	3	6	4	5	9	3	5
393:	2	4	10	13	7	11	14	19
401:	15	15	14	9	16	17	14	5
409:	3	2	0	1	0	0	0	0
417:	0	0	0	0	0	0	0	0
425:	0	0	0	0	1	1	0	1
433:	2	0	2	2	1	1	0	1
441:	2	2	1	2	1	0	1	5
449:	2	1	2	2	3	2	6	2
457:	4	2	5	4	4	5	5	5
465:	1	2	3	2	3	1	1	1
473:	2	1	1	3	4	0	1	0
481:	3	1	1	1	2	1	2	0
489:	2	0	2	1	2	2	1	0
497:	1	3	1	0	1	3	3	0
505:	0	1	2	0	0	0	0	1
513:	1	1	0	0	0	0	0	3
521:	0	0	1	0	1	0	0	2
529:	0	2	0	0	0	0	0	0
537:	1	0	0	0	0	0	0	0
545:	0	0	0	0	0	0	0	0
553:	0	0	0	0	0	0	0	0
561:	0	0	0	0	0	0	0	0
569:	0	0	0	0	0	0	0	0
577:	0	0	0	0	0	0	0	0
585:	0	0	0	0	0	0	1	0
593:	0	0	0	0	0	0	0	0
601:	0	0	0	0	0	0	0	1
609:	0	0	0	0	0	0	0	0
617:	0	0	1	1	1	0	1	1
625:	0	3	1	0	0	1	1	0
633:	1	3	0	1	0	0	0	0
641:	0	2	0	0	1	0	1	4
649:	4	3	2	2	2	1	0	2
657:	1	0	0	0	0	0	0	0
665:	0	0	0	0	0	0	0	0
673:	0	0	0	0	0	0	0	0
681:	0	0	0	0	1	0	0	0
689:	0	0	0	0	0	0	0	1
697:	0	0	0	0	0	0	0	0
705:	0	0	0	0	0	0	0	0
713:	0	0	0	0	0	0	0	0
721:	0	0	0	1	0	0	0	0
729:	0	0	0	0	1	0	0	1
737:	1	0	0	0	0	0	0	0
745:	0	0	0	0	0	0	0	0
753:	0	0	0	0	0	1	0	0
761:	0	0	0	0	0	0	0	0
769:	1	2	0	0	0	1	0	0
777:	2	0	0	1	1	1	1	0
785:	0	0	1	1	0	0	0	0
793:	0	0	0	0	0	0	0	0

801: 0 0 0 0 0 0 0 0

Sample Title: 06

Channel	-----	-----	-----	-----	-----	-----	-----	-----
809:	0	0	0	0	0	0	0	0
817:	0	0	0	0	0	0	0	0
825:	0	0	0	0	0	0	0	0
833:	0	0	0	0	0	0	0	0
841:	0	0	0	0	0	0	0	0
849:	0	1	1	0	0	0	0	0
857:	0	0	0	0	0	0	0	0
865:	0	0	0	0	0	0	0	1
873:	0	0	0	0	0	0	0	0
881:	0	0	0	0	0	0	0	0
889:	1	0	0	0	0	0	0	0
897:	0	0	0	0	0	0	0	1
905:	0	0	0	0	0	0	0	0
913:	0	0	0	0	0	1	0	0
921:	0	0	0	0	0	0	0	0
929:	0	0	0	0	0	0	0	0
937:	0	0	0	0	0	0	1	0
945:	0	0	1	0	0	0	1	1
953:	0	0	0	0	0	1	1	0
961:	3	2	0	0	0	0	0	0
969:	0	0	0	0	0	0	0	0
977:	0	0	0	0	0	0	0	0
985:	0	0	0	0	0	0	0	0
993:	0	0	0	0	0	0	0	0
1001:	0	0	0	0	0	0	0	0
1009:	0	0	0	0	0	0	0	0
1017:	0	0	0	0	0	0	0	0



QA SUMMARY REPORT

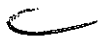
Review Of QA Results - Pulser Check

Date : 4/8/2016

Time : 5:33:35 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha 001	21f	ALL	Not Done	
Alpha 002	21f	ALL	Not Done	
Alpha 003	21f	ALL	Passed	4/8/2016 4:54:33 AM
Alpha 004	21f	ALL	Passed	4/8/2016 4:54:34 AM
Alpha 005	21f	ALL	Not Done	
Alpha 006	21f	ALL	Not Done	
Alpha 007	21f	ALL	Not Done	
Alpha 008	21f	ALL	Not Done	
Alpha 009	21f	ALL	Not Done	
Alpha 010	21f	ALL	Passed	4/8/2016 4:54:34 AM
Alpha 011	21f	ALL	Passed	4/8/2016 4:54:35 AM
Alpha 012	21f	ALL	Passed	4/8/2016 4:54:36 AM
Alpha 013	21f	ALL	Not Done	
Alpha 014	21f	ALL	Passed	4/8/2016 4:54:37 AM
Alpha 015	21f	ALL	Passed	4/8/2016 4:54:38 AM
Alpha 016	21f	ALL	Not Done	
Alpha 033	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:54:39 AM
Alpha 034	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:54:40 AM
Alpha 035	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:54:42 AM
Alpha 036	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:54:43 AM
Alpha 037	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:54:45 AM
Alpha 038	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:54:46 AM
Alpha 039	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:54:48 AM
Alpha 040	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:54:50 AM
Alpha 041	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:54:51 AM
Alpha 042	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:54:53 AM
Alpha 043	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:54:54 AM
Alpha 044	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:54:56 AM
Alpha 045	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:54:58 AM
Alpha 046	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:54:59 AM
Alpha 047	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:01 AM
Alpha 048	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:03 AM
Alpha 049	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:04 AM
Alpha 050	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:06 AM
Alpha 051	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:08 AM
Alpha 052	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:09 AM
Alpha 053	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:11 AM
Alpha 054	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:13 AM
Alpha 055	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:15 AM
Alpha 056	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:17 AM
Alpha 057	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:19 AM
Alpha 058	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:20 AM

CHAMBER	DEVICE	PARAMETER	FLAG	DATE
Alpha 059	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:22 AM
Alpha 060	Alpha Analyst100DC	ALL	Passed	4/8/2016 4:55:24 AM

APPROVED BY: APPROVAL DATE: 4/8/16

***** LIBRARY LISTING REPORT *****

Nuclide Library Title: Thorium

Nuclide Library Description: Th-227, -228, -229, -230, -232

Nuclide Name	Half-Life (Seconds)	Energy (keV)	Energy Uncert. (keV)	Yield (%)	Yield Uncert. (Abs.+ -)
TH-227	6.873E+008	5850.000*	0.000	97.5000	0.0000
TH-228	6.034E+007	5400.000*	0.000	99.9400	0.0000
TH-229	2.487E+011	4872.000*	0.000	99.5200	0.0000
TH-230	2.379E+012	4672.000*	0.000	99.8200	0.0000
TH-232	4.434E+017	3997.000*	0.000	100.0000	0.0000

* = key line

TOTALS: 5 Nuclides 5 Energy Lines

SECTION X
ANALYTICAL DATA (GAMMA SPECTROSCOPY)

16-03102

Gamma

Run 1

Work Order	16-03102	Internal Fraction	Sample Desc	Client ID	Login CPM	Sample Date	Sample Aliquot
Analysis Code	Gamma	01	LCS	LCS		03/22/16 00:00	1.0000E+00
Run	1	02	MBL	BLANK		03/22/16 00:00	1.0000E+00
Date Received	3/21/2016	03	DUP	SEDIMENT 2016-03-16A	36	03/16/16 13:35	4.4758E+02
Lab Deadline	4/12/2016	04	DO	SEDIMENT 2016-03-16A	36	03/16/16 13:35	4.4758E+02
Client	Auxier & Associates, Inc.	05	TRG	SEDIMENT 2016-03-16B	38	03/16/16 13:55	5.4129E+02
Project	WESTLAKE NCC	06	TRG	SEDIMENT 2016-03-16B DUP	34	03/16/16 13:55	5.3601E+02
Report Level	4						
Activity Units	pCi						
Aliquot Units	g						
Matrix	SO						
Method	LANL ER-130 Modified						
Instrument Type	Gamma Spectroscopy						
Radiometric Tracer							
Radiometric Sol#							
Tracer Act (dpm/g)							
Carrier							
Carrier Conc (mg/ml)							

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

16-03102

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.
 ** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

[illegible]

* SAF1 is used for Gross Alpha and all other radionuclides. SAF2 is used for Gross Beta only. ^ Indicates estimated SAF value.

** Actual mass exceeded the calibration curve range. Results should be qualified as appropriate.

THE
NEW
YORK
PUBLIC
LIBRARY

Preliminary Data Report & Analytical Calculations
Work Order: 16-03102-Gamma-1

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LSC Known	LCS %R	LCS Flag	RPD Flag	Sample Date	Sample Aliquot	Counting Date/Time	Identified
01	CO-60	LCS	LCS	pCi/g	1.38E+02	7.79E+00	7.44E-01	1.37E+02	100.71	OK		03/22/16 00:00	1.00E+00	04/11/16 07:33	YES
01	CS-137	LCS	LCS	pCi/g	8.88E+01	7.27E+00	9.37E-01	8.69E+01	102.15	OK		03/22/16 00:00	1.00E+00	04/11/16 07:33	YES
02	AC-228	MBL	BLANK	pCi/g	8.69E-02	7.85E-02	1.64E-01					03/22/16 00:00	1.00E+00	04/13/16 13:15	NO
02	BI-214	MBL	BLANK	pCi/g	-6.16E-04	4.64E-02	7.39E-02					03/22/16 00:00	1.00E+00	04/13/16 13:15	NO
02	K-40	MBL	BLANK	pCi/g	-3.82E-01	3.60E-01	3.28E-01					03/22/16 00:00	1.00E+00	04/13/16 13:15	NO
02	PA-231	MBL	BLANK	pCi/g	4.98E-02	7.34E-01	1.15E+00					03/22/16 00:00	1.00E+00	04/13/16 13:15	NO
02	PB-210	MBL	BLANK	pCi/g	4.51E-01	4.95E-01	7.39E-01					03/22/16 00:00	1.00E+00	04/13/16 13:15	NO
02	PB-212	MBL	BLANK	pCi/g	3.90E-02	3.50E-02	6.07E-02					03/22/16 00:00	1.00E+00	04/13/16 13:15	NO
02	PB-214	MBL	BLANK	pCi/g	1.31E-02	5.06E-02	7.74E-02					03/22/16 00:00	1.00E+00	04/13/16 13:15	NO
02	RA-226	MBL	BLANK	pCi/g	-6.16E-04	4.64E-02	7.39E-02					03/22/16 00:00	1.00E+00	04/13/16 13:15	NO
02	RA-228	MBL	BLANK	pCi/g	8.69E-02	7.85E-02	1.64E-01					03/22/16 00:00	1.00E+00	04/13/16 13:15	NO
02	TH-234	MBL	BLANK	pCi/g	1.32E-01	4.28E-01	5.89E-01					03/22/16 00:00	1.00E+00	04/13/16 13:15	NO
02	TL-208	MBL	BLANK	pCi/g	3.99E-02	5.67E-02	1.07E-01					03/22/16 00:00	1.00E+00	04/13/16 13:15	NO
03	AC-228	DUP	SEDIMENT 2016-03-16A	pCi/g	9.79E-01	3.27E-01	5.59E-01					03/16/16 13:35	4.48E+02	04/13/16 07:02	YES
03	BI-214	DUP	SEDIMENT 2016-03-16A	pCi/g	1.86E+00	2.34E-01	3.73E-01				OK	03/16/16 13:35	4.48E+02	04/13/16 07:02	YES
03	K-40	DUP	SEDIMENT 2016-03-16A	pCi/g	1.69E+01	2.40E+00	1.52E+00				OK	03/16/16 13:35	4.48E+02	04/13/16 07:02	YES
03	PA-231	DUP	SEDIMENT 2016-03-16A	pCi/g	9.51E-01	2.17E+00	3.74E+00					03/16/16 13:35	4.48E+02	04/13/16 07:02	NO
03	PB-210	DUP	SEDIMENT 2016-03-16A	pCi/g	4.78E+00	1.80E+00	2.74E+00					03/16/16 13:35	4.48E+02	04/13/16 07:02	YES
03	PB-212	DUP	SEDIMENT 2016-03-16A	pCi/g	1.35E+00	1.80E-01	3.11E-01					03/16/16 13:35	4.48E+02	04/13/16 07:02	YES
03	PB-214	DUP	SEDIMENT 2016-03-16A	pCi/g	1.81E+00	2.41E-01	2.92E-01				OK	03/16/16 13:35	4.48E+02	04/13/16 07:02	YES
03	RA-226	DUP	SEDIMENT 2016-03-16A	pCi/g	1.86E+00	2.34E-01	3.73E-01					03/16/16 13:35	4.48E+02	04/13/16 07:02	YES
03	RA-228	DUP	SEDIMENT 2016-03-16A	pCi/g	9.79E-01	3.27E-01	5.59E-01					03/16/16 13:35	4.48E+02	04/13/16 07:02	YES
03	TH-234	DUP	SEDIMENT 2016-03-16A	pCi/g	2.18E+00	1.80E+00	2.98E+00					03/16/16 13:35	4.48E+02	04/13/16 07:02	YES
03	TL-208	DUP	SEDIMENT 2016-03-16A	pCi/g	1.06E+00	1.92E-01	5.65E-02					03/16/16 13:35	4.48E+02	04/13/16 07:02	YES
04	AC-228	DO	SEDIMENT 2016-03-16A	pCi/g	1.30E+00	2.92E-01	5.70E-01					03/16/16 13:35	4.48E+02	04/13/16 08:07	YES
04	BI-214	DO	SEDIMENT 2016-03-16A	pCi/g	1.70E+00	2.29E-01	1.01E-01					03/16/16 13:35	4.48E+02	04/13/16 08:07	YES
04	K-40	DO	SEDIMENT 2016-03-16A	pCi/g	1.59E+01	2.22E+00	1.00E+00					03/16/16 13:35	4.48E+02	04/13/16 08:07	YES
04	PA-231	DO	SEDIMENT 2016-03-16A	pCi/g	5.84E-01	1.00E+00	3.94E+00					03/16/16 13:35	4.48E+02	04/13/16 08:07	NO
04	PB-210	DO	SEDIMENT 2016-03-16A	pCi/g	3.32E+00	2.14E+00	3.49E+00					03/16/16 13:35	4.48E+02	04/13/16 08:07	YES
04	PB-212	DO	SEDIMENT 2016-03-16A	pCi/g	1.21E+00	1.75E-01	3.42E-01					03/16/16 13:35	4.48E+02	04/13/16 08:07	YES
04	PB-214	DO	SEDIMENT 2016-03-16A	pCi/g	1.86E+00	2.42E-01	3.36E-01					03/16/16 13:35	4.48E+02	04/13/16 08:07	YES
04	RA-226	DO	SEDIMENT 2016-03-16A	pCi/g	1.70E+00	2.29E-01	1.01E-01					03/16/16 13:35	4.48E+02	04/13/16 08:07	YES
04	RA-228	DO	SEDIMENT 2016-03-16A	pCi/g	1.30E+00	2.92E-01	5.70E-01					03/16/16 13:35	4.48E+02	04/13/16 08:07	YES
04	TH-234	DO	SEDIMENT 2016-03-16A	pCi/g	1.43E+00	1.67E+00	2.24E+00					03/16/16 13:35	4.48E+02	04/13/16 08:07	NO
04	TL-208	DO	SEDIMENT 2016-03-16A	pCi/g	9.38E-01	2.15E-01	5.65E-02					03/16/16 13:35	4.48E+02	04/13/16 08:07	YES
05	AC-228	TRG	SEDIMENT 2016-03-16B	pCi/g	1.08E+00	2.05E-01	3.80E-01					03/16/16 13:55	5.41E+02	04/13/16 09:12	YES
05	BI-214	TRG	SEDIMENT 2016-03-16B	pCi/g	1.13E+00	1.78E-01	8.31E-02					03/16/16 13:55	5.41E+02	04/13/16 09:12	YES
05	K-40	TRG	SEDIMENT 2016-03-16B	pCi/g	1.32E+01	1.89E+00	1.12E+00					03/16/16 13:55	5.41E+02	04/13/16 09:12	YES

Preliminary Data Report & Analytical Calculations
Work Order: 16-03102-Gamma-1

Lab Fraction	Nuclide	Sample Desc	Client Identification	Activity Units	Results	Error Estimate	MDA	LSC Known	LCS %R	LCS Flag	RPD Flag	Sample Date	Sample Aliquot	Counting Date/Time	Identified
05	PA-231	TRG	SEDIMENT 2016-03-16B	pCi/g	1.15E+00	1.64E+00	2.82E+00					03/16/16 13:55	5.41E+02	04/13/16 09:12	NO
05	PB-210	TRG	SEDIMENT 2016-03-16B	pCi/g	2.84E+00	1.41E+00	2.22E+00					03/16/16 13:55	5.41E+02	04/13/16 09:12	YES
05	PB-212	TRG	SEDIMENT 2016-03-16B	pCi/g	9.74E-01	1.43E-01	2.47E-01					03/16/16 13:55	5.41E+02	04/13/16 09:12	YES
05	PB-214	TRG	SEDIMENT 2016-03-16B	pCi/g	1.20E+00	1.50E-01	2.48E-01					03/16/16 13:55	5.41E+02	04/13/16 09:12	YES
05	RA-226	TRG	SEDIMENT 2016-03-16B	pCi/g	1.13E+00	1.78E-01	8.31E-02					03/16/16 13:55	5.41E+02	04/13/16 09:12	YES
05	RA-228	TRG	SEDIMENT 2016-03-16B	pCi/g	1.08E+00	2.05E-01	3.80E-01					03/16/16 13:55	5.41E+02	04/13/16 09:12	YES
05	TH-234	TRG	SEDIMENT 2016-03-16B	pCi/g	1.09E+00	1.46E+00	1.91E+00					03/16/16 13:55	5.41E+02	04/13/16 09:12	NO
05	TL-208	TRG	SEDIMENT 2016-03-16B	pCi/g	7.01E-01	1.50E-01	4.67E-02					03/16/16 13:55	5.41E+02	04/13/16 09:12	YES
06	AC-228	TRG	SEDIMENT 2016-03-16B DUP	pCi/g	9.22E-01	2.43E-01	5.07E-01					03/16/16 13:55	5.36E+02	04/13/16 10:13	YES
06	BI-214	TRG	SEDIMENT 2016-03-16B DUP	pCi/g	1.32E+00	2.05E-01	2.42E-01					03/16/16 13:55	5.36E+02	04/13/16 10:13	YES
06	K-40	TRG	SEDIMENT 2016-03-16B DUP	pCi/g	1.43E+01	1.91E+00	4.63E-01					03/16/16 13:55	5.36E+02	04/13/16 10:13	YES
06	PA-231	TRG	SEDIMENT 2016-03-16B DUP	pCi/g	1.09E+00	2.06E+00	3.14E+00					03/16/16 13:55	5.36E+02	04/13/16 10:13	NO
06	PB-210	TRG	SEDIMENT 2016-03-16B DUP	pCi/g	1.59E+00	1.61E+00	2.68E+00					03/16/16 13:55	5.36E+02	04/13/16 10:13	YES
06	PB-212	TRG	SEDIMENT 2016-03-16B DUP	pCi/g	1.09E+00	1.41E-01	2.68E-01					03/16/16 13:55	5.36E+02	04/13/16 10:13	YES
06	PB-214	TRG	SEDIMENT 2016-03-16B DUP	pCi/g	1.38E+00	1.68E-01	2.48E-01					03/16/16 13:55	5.36E+02	04/13/16 10:13	YES
06	RA-226	TRG	SEDIMENT 2016-03-16B DUP	pCi/g	1.32E+00	2.05E-01	2.42E-01					03/16/16 13:55	5.36E+02	04/13/16 10:13	YES
06	RA-228	TRG	SEDIMENT 2016-03-16B DUP	pCi/g	9.22E-01	2.43E-01	5.07E-01					03/16/16 13:55	5.36E+02	04/13/16 10:13	YES
06	TH-234	TRG	SEDIMENT 2016-03-16B DUP	pCi/g	2.01E+00	1.70E+00	2.83E+00					03/16/16 13:55	5.36E+02	04/13/16 10:13	YES
06	TL-208	TRG	SEDIMENT 2016-03-16B DUP	pCi/g	7.31E-01	1.77E-01	4.72E-02					03/16/16 13:55	5.36E+02	04/13/16 10:13	YES

16-03102

Count Room Report

Client: Auxier Associates, Inc.

16-03102-Gamma-1 (pCi/g) in SO

Tracer ID:

Printed: 3/23/2016 10:37 AM

Page 1 of 1

W. Casman

[illegible]

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

GAS-1302

94268

Sand in 16 Ounce PP Taral Jar Filled to Top

Customer: Eberline Analytical Corporation

P.O. No.: 1304009, Item 7 **Product Code:** 8401-EG-SAN

Reference Date: 01-Jul-2013 12:00 PM EST **Grams of Master Source:** 0.017994

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Additional radionuclides were added gravimetrically from solutions calibrated by gamma-ray spectrometry, ionization chamber, or liquid scintillation counting. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master	This Source	Uncertainty*, %			Calibration
			Source* yps/gram		Type	Method*		
				yps	u _A	u _B	U	
Am-241	59.5	1.580E+05	————	2.094E+03	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.641E+05	2.952E+03	0.5	2.3	4.7	HPGe
Co-57	122.1	2.718E+02	8.865E+04	1.595E+03	0.4	2.0	4.1	HPGe
Ce-139	165.9	1.376E+02	1.243E+05	2.236E+03	0.4	1.9	3.9	HPGe
Hg-203	279.2	4.661E+01	2.627E+05	4.727E+03	0.3	1.9	3.8	HPGe
Sn-113	391.7	1.151E+02	1.736E+05	3.124E+03	0.4	1.9	3.9	HPGe
Cs-137	661.7	1.098E+04	1.120E+05	2.015E+03	0.7	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.197E+05	7.553E+03	0.5	1.9	3.9	HPGe
Co-60	1173.2	1.925E+03	2.074E+05	3.732E+03	0.6	1.9	4.0	HPGe
Co-60	1332.5	1.925E+03	2.074E+05	3.732E+03	0.7	1.9	4.0	HPGe
Y-88	1836.1	1.066E+02	4.444E+05	7.996E+03	0.7	1.9	4.0	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4 π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

Comments	
Special Codes	H: Hot, O: Organic Hazard, P: PCB Hazard, R: Rush, T: Other (see comments)

Analysis Report for 1603102-01
GAS-1302

✓
4/11/16

GAMMA SPECTRUM ANALYSIS

Sample Identification : 1603102-01
Sample Description : GAS-1302
Sample Type : SOIL

Sample Size : 7.360E+02 grams
Facility : Countroom

Sample Taken On : 7/1/2013 7:10:52AM
Acquisition Started : 4/11/2016 7:33:44AM

Procedure : GAS-1402 pCi
Operator : Administrator
Detector Name : GE2
Geometry : GAS-1402
Live Time : 1800.0 seconds
Real Time : 1825.6 seconds

Dead Time : 1.40 %

Peak Locate Threshold : 2.50
Peak Locate Range (in channels) : 1 - 4096
Peak Area Range (in channels) : 5 - 4096
Identification Energy Tolerance : 1.000 keV

Energy Calibration Used Done On : 11/2/2014
Efficiency Calibration Used Done On : 4/6/2016
Efficiency Calibration Description :

Sample Number : 35517

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AC
4/13/16

Analysis Report for 1603102-01
GAS-1302

PEAK LOCATE REPORT

Peak Locate Performed on : 4/11/2016 8:04:13AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	12.12	12.25	0.0000	0.00
2	21.93	22.05	0.0000	0.00
3	24.91	25.03	0.0000	0.00
4	31.87	31.98	0.0000	0.00
5	50.36	50.46	0.0000	0.00
6	59.17	59.27	0.0000	0.00
7	67.80	67.90	0.0000	0.00
8	85.28	85.36	0.0000	0.00
9	87.79	87.87	0.0000	0.00
10	121.83	121.89	0.0000	0.00
11	136.18	136.23	0.0000	0.00
12	165.54	165.58	0.0000	0.00
13	238.31	238.30	0.0000	0.00
14	392.07	391.99	0.0000	0.00
15	511.09	510.95	0.0000	0.00
16	583.53	583.35	0.0000	0.00
17	661.82	661.60	0.0000	0.00
18	740.20	739.95	0.0000	0.00
19	848.60	848.30	0.0000	0.00
20	1169.83	1169.40	0.0000	0.00
21	1173.82	1173.40	0.0000	0.00
22	1333.20	1332.72	0.0000	0.00
23	1666.82	1666.24	0.0000	0.00
24	1670.82	1670.24	0.0000	0.00
25	1837.28	1836.66	0.0000	0.00
26	1853.40	1852.77	0.0000	0.00
27	1866.80	1866.17	0.0000	0.00
28	1982.29	1981.64	0.0000	0.00
29	1991.93	1991.28	0.0000	0.00
30	2056.35	2055.69	0.0000	0.00
31	2110.54	2109.87	0.0000	0.00
32	2305.47	2304.77	0.0000	0.00
33	2344.44	2343.72	0.0000	0.00
34	2362.34	2361.63	0.0000	0.00
35	2369.34	2368.62	0.0000	0.00
36	2506.87	2506.14	0.0000	0.00
37	2615.48	2614.74	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1603102-01

GAS-1302

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/11/2016 8:04:13AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	12.12	10 -	15	12.25	7.21E+03	355.07	1.96E+04	1.17
M	2	21.93	19 -	28	22.05	7.97E+04	570.24	8.99E+03	1.10
m	3	24.91	19 -	28	25.03	2.72E+04	416.63	6.75E+03	1.28
	4	31.87	30 -	35	31.98	1.64E+03	243.74	1.07E+04	1.17
M	5	50.36	45 -	62	50.46	4.61E+03	305.90	1.46E+04	1.46
m	6	59.17	45 -	62	59.27	7.44E+04	638.58	1.16E+04	1.46
	7	67.80	66 -	71	67.90	6.40E+02	307.21	1.84E+04	2.86
M	8	85.28	83 -	92	85.36	8.41E+02	279.28	1.50E+04	2.36
m	9	87.79	83 -	92	87.87	2.86E+04	376.76	7.61E+03	1.03
	10	121.83	118 -	124	121.89	5.50E+03	290.09	1.13E+04	1.10
	11	136.18	133 -	139	136.23	5.73E+02	248.02	1.08E+04	1.35
	12	165.54	163 -	169	165.58	4.92E+02	233.18	9.52E+03	1.41
	13	238.31	237 -	240	238.30	1.75E+02	145.33	5.10E+03	1.29
	14	392.07	390 -	395	391.99	2.18E+02	157.42	4.77E+03	1.96
	15	511.09	508 -	514	510.95	1.87E+02	151.65	4.04E+03	2.09
	16	583.53	581 -	586	583.35	1.21E+02	120.16	2.79E+03	2.77
	17	661.82	657 -	666	661.60	2.76E+04	375.45	4.36E+03	1.87
	18	740.20	738 -	743	739.95	1.08E+02	109.94	2.34E+03	1.65
	19	848.60	846 -	850	848.30	9.90E+01	100.46	2.15E+03	1.19
M	20	1169.83	1168 -	1178	1169.40	3.91E+01	35.82	4.27E+02	2.11
m	21	1173.82	1168 -	1178	1173.40	2.33E+04	312.79	9.41E+02	1.79
	22	1333.20	1327 -	1338	1332.72	2.12E+04	299.23	5.65E+02	2.01
M	23	1666.82	1665 -	1675	1666.24	2.65E+01	8.60	1.40E+01	2.67
m	24	1670.82	1665 -	1675	1670.24	2.17E+01	23.07	5.60E+01	2.68
	25	1837.28	1832 -	1840	1836.66	3.90E+01	32.12	1.34E+02	2.40
	26	1853.40	1842 -	1863	1852.77	6.05E+01	44.00	1.21E+02	17.76
	27	1866.80	1864 -	1870	1866.17	1.28E+01	15.17	3.43E+01	2.86
	28	1982.29	1973 -	1987	1981.64	4.71E+01	33.40	9.78E+01	8.69
	29	1991.93	1988 -	1995	1991.28	1.44E+01	17.89	4.33E+01	2.36
	30	2056.35	2051 -	2059	2055.69	1.94E+01	19.97	4.91E+01	6.61
	31	2110.54	2107 -	2112	2109.87	1.47E+01	12.77	2.05E+01	1.93
	32	2305.47	2302 -	2308	2304.77	9.16E+00	12.23	1.97E+01	1.88
	33	2344.44	2341 -	2347	2343.72	9.38E+00	10.82	1.52E+01	1.52
	34	2362.34	2357 -	2365	2361.63	8.53E+00	10.99	1.29E+01	1.67
	35	2369.34	2366 -	2372	2368.62	9.77E+00	7.50	2.45E+00	1.18
	36	2506.87	2502 -	2510	2506.14	2.38E+02	30.85	0.00E+00	2.37
	37	2615.48	2609 -	2619	2614.74	1.90E+01	8.72	0.00E+00	4.33

Analysis Report for 1603102-01

GAS-1302

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet
 Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/11/2016 8:04:13AM

Peak Analysis From Channel : 1
 Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	12.12	10 -	15	7.21E+03	355.07	1.96E+04	2.56E+02
M	2	21.93	19 -	28	7.97E+04	570.24	8.99E+03	1.56E+02
m	3	24.91	19 -	28	2.72E+04	416.63	6.75E+03	1.35E+02
	4	31.87	30 -	35	1.64E+03	243.74	1.07E+04	1.89E+02
M	5	50.36	45 -	62	4.61E+03	305.90	1.46E+04	1.99E+02
m	6	59.17	45 -	62	7.44E+04	638.58	1.16E+04	1.77E+02
	7	67.80	66 -	71	6.40E+02	307.21	1.84E+04	2.49E+02
M	8	85.28	83 -	92	8.41E+02	279.28	1.50E+04	2.01E+02
m	9	87.79	83 -	92	2.86E+04	376.76	7.61E+03	1.43E+02
	10	121.83	118 -	124	5.50E+03	290.09	1.13E+04	2.05E+02
	11	136.18	133 -	139	5.73E+02	248.02	1.08E+04	2.00E+02
	12	165.54	163 -	169	4.92E+02	233.18	9.52E+03	1.88E+02
	13	238.31	237 -	240	1.75E+02	145.33	5.10E+03	1.17E+02
	14	392.07	390 -	395	2.18E+02	157.42	4.77E+03	1.27E+02
	15	511.09	508 -	514	1.87E+02	151.65	4.04E+03	1.23E+02
	16	583.53	581 -	586	1.21E+02	120.16	2.79E+03	9.71E+01
	17	661.82	657 -	666	2.76E+04	375.45	4.36E+03	1.44E+02
	18	740.20	738 -	743	1.08E+02	109.94	2.34E+03	8.87E+01
	19	848.60	846 -	850	9.90E+01	100.46	2.15E+03	8.09E+01
M	20	1169.83	1168 -	1178	3.91E+01	35.82	4.27E+02	3.40E+01
m	21	1173.82	1168 -	1178	2.33E+04	312.79	9.41E+02	5.04E+01
	22	1333.20	1327 -	1338	2.12E+04	299.23	5.65E+02	5.57E+01
M	23	1666.82	1665 -	1675	2.65E+01	8.60	1.40E+01	6.15E+00
m	24	1670.82	1665 -	1675	2.17E+01	23.07	5.60E+01	1.23E+01
	25	1837.28	1832 -	1840	3.90E+01	32.12	1.34E+02	2.43E+01
	26	1853.40	1842 -	1863	6.05E+01	44.00	1.21E+02	3.38E+01
	27	1866.80	1864 -	1870	1.28E+01	15.17	3.43E+01	1.10E+01
	28	1982.29	1973 -	1987	4.71E+01	33.40	9.78E+01	2.50E+01
	29	1991.93	1988 -	1995	1.44E+01	17.89	4.33E+01	1.33E+01
	30	2056.35	2051 -	2059	1.94E+01	19.97	4.91E+01	1.47E+01
	31	2110.54	2107 -	2112	1.47E+01	12.77	2.05E+01	8.38E+00

Analysis Report for 1603102-01

GAS-1302

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
32	2305.47	2302 -	2308	9.16E+00	12.23	1.97E+01	8.73E+00
33	2344.44	2341 -	2347	9.38E+00	10.82	1.52E+01	7.33E+00
34	2362.34	2357 -	2365	8.53E+00	10.99	1.29E+01	7.65E+00
35	2369.34	2366 -	2372	9.77E+00	7.50	2.45E+00	3.41E+00
36	2506.87	2502 -	2510	2.38E+02	30.85	0.00E+00	0.00E+00
37	2615.48	2609 -	2619	1.90E+01	8.72	0.00E+00	0.00E+00

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

PEAK WITH NID REPORT

Peak Analysis Performed on : 4/11/2016 8:04:13AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Peak Match Tolerance : 1.000 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	12.12	10 -	15	12.25	7.21E+03	355.07	1.96E+04	.....
M	2	21.93	19 -	28	22.05	7.97E+04	570.24	8.99E+03	.....
m	3	24.91	19 -	28	25.03	2.72E+04	416.63	6.75E+03	TH-231
	4	31.87	30 -	35	31.98	1.64E+03	243.74	1.07E+04	.....
M	5	50.36	45 -	62	50.46	4.61E+03	305.90	1.46E+04	TH-227
									TE-132
m	6	59.17	45 -	62	59.27	7.44E+04	638.58	1.16E+04	AM-241
	7	67.80	66 -	71	67.90	6.40E+02	307.21	1.84E+04	TA-182
									TI-44
									TH-230
M	8	85.28	83 -	92	85.36	8.41E+02	279.28	1.50E+04	.....
m	9	87.79	83 -	92	87.87	2.36E+04	376.76	7.61E+03	SN-126
									CD-109
									LU-176
	10	121.83	118 -	124	121.89	5.50E+03	290.09	1.13E+04	EU-152
									CO-57
									SE-75
	11	136.18	133 -	139	136.23	5.73E+02	248.02	1.08E+04	SE-75
									CO-57
	12	165.54	163 -	169	165.58	4.92E+02	223.18	9.52E+03	CE-139

: 00179

Analysis Report for 1603102-01

GAS-1302

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	13	238.31	237 -	240	238.30	1.75E+02	145.33	5.10E+03	PB-212
	14	392.07	390 -	395	391.99	2.18E+02	157.42	4.77E+03	SN-113
	15	511.09	508 -	514	510.95	1.87E+02	151.65	4.04E+03	.....
	16	583.53	581 -	586	583.35	1.21E+02	120.16	2.79E+03	TL-208
	17	661.82	657 -	666	661.60	2.76E+04	375.45	4.36E+03	CS-137
	18	740.20	738 -	743	739.95	1.08E+02	109.94	2.34E+03	MO-99
	19	848.60	846 -	850	848.30	9.90E+01	100.46	2.15E+03	.....
M	20	1169.83	1168 -	1178	1169.40	3.91E+01	35.82	4.27E+02	.....
m	21	1173.82	1168 -	1178	1173.40	2.33E+04	312.79	9.41E+02	CO-60
	22	1333.20	1327 -	1338	1332.72	2.12E+04	299.23	5.65E+02	CO-60
M	23	1666.82	1665 -	1675	1666.24	2.65E+01	8.60	1.40E+01	.....
m	24	1670.82	1665 -	1675	1670.24	2.17E+01	23.07	5.60E+01	.....
	25	1837.28	1832 -	1840	1836.66	3.90E+01	32.12	1.34E+02	.....
	26	1853.40	1842 -	1863	1852.77	6.05E+01	44.00	1.21E+02	.....
	27	1866.80	1861 -	1870	1866.17	1.28E+01	15.17	3.43E+01	.....
	28	1982.29	1973 -	1987	1981.64	4.71E+01	33.40	9.78E+01	.....
	29	1991.93	1988 -	1995	1991.28	1.44E+01	17.89	4.33E+01	.....
	30	2056.35	2051 -	2059	2055.69	1.94E+01	19.97	4.91E+01	.....
	31	2110.54	2107 -	2112	2109.87	1.47E+01	12.77	2.05E+01	.....
	32	2305.47	2302 -	2308	2304.77	9.16E+00	12.23	1.97E+01	.....
	33	2344.44	2341 -	2347	2343.72	9.38E+00	10.82	1.52E+01	.....
	34	2362.34	2357 -	2365	2361.63	8.53E+00	10.99	1.29E+01	.....
	35	2369.34	2366 -	2372	2368.62	9.77E+00	7.50	2.45E+00	.....
	36	2506.87	2502 -	2510	2506.14	2.38E+02	30.85	0.00E+00	.....
	37	2615.48	2609 -	2619	2614.74	1.90E+01	8.72	0.00E+00	TL-208

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 4/11/2016 8:04:13AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	12.12	7.21E+03	355.07	5.26E-06	1.66E-03
M	2	21.93	7.97E+04	570.24	1.23E-03	1.66E-03
m	3	24.91	2.72E+04	416.63	2.48E-03	1.66E-03
	4	31.87	1.64E+03	243.74	6.90E-03	1.66E-03
M	5	50.36	4.61E+03	305.90	1.91E-02	1.66E-03

Analysis Report for 1603102-01

GAS-1302

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
m	6	59.17	7.44E+04	638.58	2.26E-02	1.66E-03
	7	67.80	6.40E+02	307.21	2.46E-02	1.84E-03
M	8	85.28	8.41E+02	279.28	2.60E-02	2.22E-03
m	9	87.79	2.86E+04	376.76	2.60E-02	2.27E-03
	10	121.83	5.50E+03	290.09	2.45E-02	2.26E-03
	11	136.18	5.73E+02	248.02	2.34E-02	2.32E-03
	12	165.54	4.92E+02	233.18	2.13E-02	2.43E-03
	13	238.31	1.75E+02	145.33	1.70E-02	2.31E-03
	14	392.07	2.18E+02	157.42	1.20E-02	2.05E-03
	15	511.09	1.87E+02	151.65	9.76E-03	1.43E-03
	16	583.53	1.21E+02	120.16	8.79E-03	1.06E-03
	17	661.82	2.76E+04	375.45	7.93E-03	6.52E-04
	18	740.20	1.08E+02	109.94	7.24E-03	7.53E-04
	19	848.60	9.90E+01	100.46	6.46E-03	8.92E-04
M	20	1169.83	3.91E+01	35.82	4.98E-03	4.06E-04
m	21	1173.82	2.33E+04	312.79	4.97E-03	3.99E-04
	22	1333.20	2.12E+04	299.23	4.51E-03	3.63E-04
M	23	1666.82	2.65E+01	8.60	3.89E-03	3.88E-04
m	24	1670.82	2.17E+01	23.07	3.89E-03	3.88E-04
	25	1837.28	3.90E+01	32.12	3.70E-03	4.01E-04
	26	1853.40	6.05E+01	44.00	3.68E-03	4.01E-04
	27	1866.80	1.28E+01	15.17	3.67E-03	4.01E-04
	28	1982.29	4.71E+01	33.40	3.57E-03	4.01E-04
	29	1991.93	1.44E+01	17.89	3.57E-03	4.01E-04
	30	2056.35	1.94E+01	19.97	3.53E-03	4.01E-04
	31	2110.54	1.47E+01	12.77	3.50E-03	4.01E-04
	32	2305.47	9.16E+00	12.23	3.42E-03	4.01E-04
	33	2344.44	9.38E+00	10.82	3.41E-03	4.01E-04
	34	2362.34	8.53E+00	10.99	3.41E-03	4.01E-04
	35	2369.34	9.77E+00	7.50	3.41E-03	4.01E-04
	36	2506.87	2.38E+02	30.85	3.39E-03	4.01E-04
	37	2615.48	1.90E+01	8.72	3.40E-03	4.01E-04

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/11/2016 8:04:13AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000035177.CNF

Analysis Report for 1603102-01

GAS-1302

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	12.12	7.21E+03	355.07	4.19E+02	2.00E+01	6.79E+03	3.56E+02
M	2	21.93	7.97E+04	570.24			7.97E+04	5.70E+02
m	3	24.91	2.72E+04	416.63			2.72E+04	4.17E+02
	4	31.87	1.64E+03	243.74			1.64E+03	2.44E+02
M	5	50.36	4.61E+03	305.90			4.61E+03	3.06E+02
m	6	59.17	7.44E+04	638.58			7.44E+04	6.39E+02
	7	67.80	6.40E+02	307.21			6.40E+02	3.07E+02
M	8	85.28	8.41E+02	279.28			8.41E+02	2.79E+02
m	9	87.79	2.86E+04	376.76	2.94E+00	4.08E+00	2.86E+04	3.77E+02
	10	121.83	5.50E+03	290.09			5.50E+03	2.90E+02
	11	136.18	5.73E+02	248.02			5.73E+02	2.48E+02
	12	165.54	4.92E+02	233.18			4.92E+02	2.33E+02
	13	238.31	1.75E+02	145.33	5.33E+00	3.43E+00	1.70E+02	1.45E+02
	14	392.07	2.18E+02	157.42			2.18E+02	1.57E+02
	15	511.09	1.87E+02	151.65	3.57E+01	2.57E+00	1.51E+02	1.52E+02
	16	583.53	1.21E+02	120.16			1.21E+02	1.20E+02
	17	661.82	2.76E+04	375.45	8.21E-01	1.60E+00	2.76E+04	3.75E+02
	18	740.20	1.08E+02	109.94			1.08E+02	1.10E+02
	19	848.60	9.90E+01	100.46			9.90E+01	1.00E+02
M	20	1169.83	3.91E+01	35.82			3.91E+01	3.58E+01
m	21	1173.82	2.33E+04	312.79			2.33E+04	3.13E+02
	22	1333.20	2.12E+04	299.23	2.19E+00	1.11E+00	2.12E+04	2.99E+02
M	23	1666.82	2.65E+01	8.60			2.65E+01	8.60E+00
m	24	1670.82	2.17E+01	23.07			2.17E+01	2.31E+01
	25	1837.28	3.90E+01	32.12			3.90E+01	3.21E+01
	26	1853.40	6.05E+01	44.00			6.05E+01	4.40E+01
	27	1866.80	1.28E+01	15.17			1.28E+01	1.52E+01
	28	1982.29	4.71E+01	33.40			4.71E+01	3.34E+01
	29	1991.93	1.44E+01	17.89			1.44E+01	1.79E+01
	30	2056.35	1.94E+01	19.97			1.94E+01	2.00E+01
	31	2110.54	1.47E+01	12.77			1.47E+01	1.28E+01
	32	2305.47	9.16E+00	12.23			9.16E+00	1.22E+01
	33	2344.44	9.38E+00	10.82			9.38E+00	1.08E+01
	34	2362.34	8.53E+00	10.99			8.53E+00	1.10E+01
	35	2369.34	9.77E+00	7.50			9.77E+00	7.50E+00
	36	2506.87	2.38E+02	30.85			2.38E+02	3.09E+01
	37	2615.48	1.90E+01	8.72			1.90E+01	8.72E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

Analysis Report for 1603102-01

GAS-1302

AREA CORRECTION REPORT

REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 4/11/2016 8:04:13AM

Ref. Peak Energy : 0.00

Reference Date :

Peak Ratio : 0.00

Uncertainty : 0.00

Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000035177.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	12.12	7.21E+03	355.07	4.19E+02	2.00E+01	6.79E+03	3.56E+02
M	2	21.93	7.97E+04	570.24			7.97E+04	5.70E+02
m	3	24.91	2.72E+04	416.63			2.72E+04	4.17E+02
	4	31.87	1.64E+03	243.74			1.64E+03	2.44E+02
M	5	50.36	4.61E+03	305.90			4.61E+03	3.06E+02
m	6	59.17	7.44E+04	638.58			7.44E+04	6.39E+02
	7	67.80	6.40E+02	307.21			6.40E+02	3.07E+02
M	8	85.28	8.41E+02	279.28			8.41E+02	2.79E+02
m	9	87.79	2.86E+04	376.76	2.94E+00	4.08E+00	2.86E+04	3.77E+02
	10	121.83	5.50E+03	290.09			5.50E+03	2.90E+02
	11	136.18	5.73E+02	248.02			5.73E+02	2.48E+02
	12	165.54	4.92E+02	233.18			4.92E+02	2.33E+02
	13	238.31	1.75E+02	145.33	5.33E+00	3.43E+00	1.70E+02	1.45E+02
	14	392.07	2.18E+02	157.42			2.18E+02	1.57E+02
	15	511.09	1.87E+02	151.65	3.57E+01	2.57E+00	1.51E+02	1.52E+02
	16	583.53	1.21E+02	120.16			1.21E+02	1.20E+02
	17	661.82	2.76E+04	375.45	8.21E-01	1.60E+00	2.76E+04	3.75E+02
	18	740.20	1.08E+02	109.94			1.08E+02	1.10E+02
	19	848.60	9.90E+01	100.46			9.90E+01	1.00E+02
M	20	1169.83	3.91E+01	35.82			3.91E+01	3.58E+01
m	21	1173.82	2.33E+04	312.79			2.33E+04	3.13E+02
	22	1333.20	2.12E+04	299.23	2.19E+00	1.11E+00	2.12E+04	2.99E+02
M	23	1666.82	2.65E+01	8.60			2.65E+01	8.60E+00
m	24	1670.82	2.17E+01	23.07			2.17E+01	2.31E+01
	25	1837.28	3.90E+01	32.12			3.90E+01	3.21E+01
	26	1853.40	6.05E+01	44.00			6.05E+01	4.40E+01
	27	1866.80	1.28E+01	15.17			1.28E+01	1.52E+01
	28	1982.29	4.71E+01	33.40			4.71E+01	3.34E+01
	29	1991.93	1.44E+01	17.89			1.44E+01	1.79E+01
	30	2056.35	1.94E+01	19.97			1.94E+01	2.00E+01
	31	2110.54	1.47E+01	12.77			1.47E+01	1.28E+01
	32	2305.47	9.16E+00	12.23			9.16E+00	1.22E+01
	33	2344.44	9.38E+00	10.82			9.38E+00	1.08E+01
	34	2362.34	8.53E+00	10.99			8.53E+00	1.10E+01
	35	2369.34	9.77E+00	7.50			9.77E+00	7.50E+00
	36	2506.87	2.38E+02	30.85			2.38E+02	3.09E+01
	37	2615.48	1.90E+01	8.72			1.90E+01	8.72E+00

Analysis Report for 1603102-01
GAS-1302

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
CO-57	0.923	122.06 *	85.51	7.20E+01	7.72E+00
		136.48 *	10.60	6.33E+01	2.82E+01
CO-60	0.931	1173.22 *	100.00	1.38E+02	1.12E+01
		1332.49 *	100.00	1.38E+02	1.13E+01
CD-109	0.967	88.03 *	3.72	2.74E+03	2.91E+02
SN-113	0.626	255.12	1.93		
		391.69 *	64.90	2.58E+02	1.92E+02
SN-126	0.992	87.57 *	37.00	6.05E+01	5.33E+00
CS-137	0.996	661.65 *	85.12	8.88E+01	7.41E+00
CE-139	0.750	165.85 *	80.35	9.74E+01	4.75E+01
TL-208	0.829	583.14 *	30.22	9.30E-01	9.30E-01
		860.37	4.48		
		2614.66 *	35.85	3.18E-01	1.51E-01
PB-212	0.879	238.63 *	44.60	4.56E-01	3.95E-01
		300.09	3.41		
AM-241	0.979	59.54 *	35.90	1.88E+02	1.40E+01

* = Energy line found in the spectrum.

- = Manually added nuclide.

? = Manually edited nuclide.

Energy Tolerance : 1.000 keV

Nuclide confidence index threshold = 0.30

Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/11/2016 8:04:13AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

: 00104

Analysis Report for 1603102-01
GAS-1302

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	12.12	3.77432E+00		
M	2	21.93	4.42901E+01		
m	3	24.91	1.50919E+01	Tol.	TH-231
	4	31.87	9.13275E-01		
M	5	50.36	2.56281E+00	Tol.	TE-132 TH-227
	7	67.80	3.55454E-01	Tol.	TI-44 TA-182 TH-230
M	8	85.28	4.67079E-01		
	15	511.09	8.40313E-02		
	18	740.20	5.97466E-02	Tol.	MO-99
	19	848.60	5.49972E-02		
M	20	1169.83	2.17262E-02		
M	23	1666.82	1.47056E-02		
m	24	1670.82	1.20428E-02		
	25	1837.28	2.16614E-02		
	26	1853.40	3.36226E-02		
	27	1866.80	7.12963E-03		
	28	1982.29	2.61603E-02		
	29	1991.93	7.97840E-03		
	30	2056.35	1.08018E-02		
	31	2110.54	8.18889E-03		
	32	2305.47	5.08772E-03		
	33	2344.44	5.21242E-03		
	34	2362.34	4.74074E-03		
	35	2369.34	5.42929E-03		
	36	2506.87	1.32222E-01	Sum	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OF_GAMMA1\Ape\Root\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Analysis Report for 1603102-01
GAS-1302

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
CO-57	0.92	122.06 *		85.51	7.20E+01	7.72E+00
		136.48 *		10.60	6.33E+01	2.82E+01
CO-60	0.93	1173.22 *		100.00	1.38E+02	1.12E+01
		1332.49 *		100.00	1.38E+02	1.13E+01
CD-109	0.96	88.03 *		3.72	2.74E+03	2.91E+02
SN-113	0.62	255.12 *		1.93		
		391.69 *		64.90	2.58E+02	1.92E+02
SN-126	0.99	87.57 *		37.00	6.05E+01	5.33E+00
CS-137	0.99	661.65 *		85.12	8.88E+01	7.41E+00
CE-139	0.75	165.85 *		80.35	9.74E+01	4.75E+01
TL-208	0.82	583.14 *		30.22	9.30E-01	9.30E-01
		860.37		4.48		
		2614.66 *		35.85	3.18E-01	1.51E-01
PB-212	0.87	238.63 *		44.60	4.56E-01	3.95E-01
		300.09		3.41		
AM-241	0.97	59.54 *		35.90	1.88E+02	1.40E+01

* = Energy line found in the spectrum.

- = Manually added nuclide.

? = Manually edited nuclide.

@ = Energy line not used for Weighted Mean Activity

Energy Tolerance : 1.000 keV

Nuclide confidence index threshold = 0.30

Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
CO-57	0.923	7.14E+01	7.45E+00	
CO-60	0.931	1.38E+02	7.95E+00	
? CD-109	0.967	2.74E+03	2.91E+02	
SN-113	0.626	2.58E+02	1.92E+02	
? SN-126	0.992	6.05E+01	5.33E+00	
CS-137	0.996	8.88E+01	7.41E+00	
CE-139	0.750	9.74E+01	4.75E+01	
TL-208	0.829	3.34E-01	1.49E-01	
PB-212	0.879	4.56E-01	3.95E-01	
AM-241	0.979	1.88E+02	1.40E+01	

Analysis Report for 1603102-01
GAS-1302

- ? = nuclide is part of an undetermined solution
- X = nuclide rejected by the interference analysis
- @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 1603102-01
GAS-1302

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/11/2016 8:04:13AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	12.12	3.77432E+00		
M	2	21.93	4.42901E+01		
m	3	24.51	1.50919E+01		
	4	31.87	9.13275E-01		
M	5	50.36	2.56281E+00		
	7	67.80	3.55454E-01		
					TH-231
					TE-132
					TH-227
					TI-44
					TA-182
					TH-230
M	8	85.28	4.67079E-01		
	15	511.09	8.40313E-02		
	18	740.20	5.97466E-02		
	19	848.60	5.49972E-02		
M	20	1169.83	2.17262E-02		
M	23	1666.82	1.47056E-02		
m	24	1670.82	1.20428E-02		
	25	1837.28	2.16614E-02		
	26	1853.40	3.36226E-02		
	27	1866.80	7.12963E-03		
	28	1982.29	2.61603E-02		
	29	1991.93	7.97840E-03		
	30	2056.35	1.08018E-02		
	31	2110.54	8.18889E-03		
	32	2305.47	5.08772E-03		
	33	2344.44	5.21242E-03		
	34	2362.34	4.74074E-03		
	35	2369.34	5.42929E-03		
	36	2506.87	1.32222E-01		
				Sum	

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

Analysis Report for 1603102-01
GAS-1302

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	10.42	-4.21E+05	2.10E+06	2.10E+06
+	NA-22	1274.54	99.94	-4.49E-02	6.27E-01	6.27E-01
+	@ NA-24	1368.52	99.99	1.00E+26	1.00E+26	1.00E+26
	@	2754.09	99.86	0.00E+00		1.00E+26
+	AL-26	1808.65	99.76	-3.05E-02	2.16E-01	2.16E-01
+	K-40	1460.81	10.67	-6.61E-01	1.94E+00	1.94E+00
+	@ AR-41	1293.64	99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88	94.40	1.41E-01	2.73E-01	3.02E-01
		78.34	96.00	-4.92E-02		2.73E-01
+	SC-46	889.25	99.98	9.49E+01	2.82E+03	2.93E+03
		1120.51	99.99	-2.12E+02		2.82E+03
+	V-48	983.52	99.98	-6.60E+18	4.30E+18	9.01E+18
		1312.10	97.50	-2.29E+18		4.30E+18
+	CR-51	320.08	9.83	1.72E+11	3.63E+11	3.63E+11
+	MN-54	834.83	99.97	3.63E+00	5.62E+00	5.62E+00
+	CO-56	846.75	99.96	-1.03E+03	1.98E+03	4.53E+03
		1037.75	14.03	1.78E+04		3.66E+04
		1238.25	67.00	-6.51E+02		3.80E+03
		1771.40	15.51	-2.14E+03		9.85E+03
		2598.48	16.90	2.69E+02		1.98E+03
+	CO-57	122.06	* 85.51	7.20E+01	5.41E+00	5.41E+00
		136.48	* 10.60	6.33E+01		4.45E+01
+	CO-58	810.76	99.40	1.44E+03	1.18E+04	1.18E+04
+	FE-59	1099.22	56.50	9.16E+05	4.65E+06	8.86E+06
		1291.56	43.20	-1.82E+05		4.65E+06
+	CO-60	1173.22	* 100.00	1.38E+02	7.44E-01	1.14E+00
		1332.49	* 100.00	1.38E+02		7.44E-01
+	ZN-65	1115.52	50.75	3.63E+01	2.47E+01	2.47E+01
+	@ GA-67	93.31	35.70	1.00E+26	1.00E+26	1.00E+26
	@	208.95	2.24	1.00E+26		1.00E+26
	@	300.22	16.00	1.00E+26		1.00E+26
+	SE-75	121.11	16.70	9.76E+03	1.63E+02	8.10E+02
		136.00	59.20	3.27E+02		1.63E+02
		264.65	59.80	6.42E+01		1.88E+02
		279.53	25.20	-1.02E+02		4.49E+02
		400.65	11.40	-3.75E+01		1.18E+03
+	RB-82	776.52	13.00	6.37E+11	3.73E+12	3.73E+12
+	RB-83	520.41	46.00	-5.36E+02	2.87E+03	2.87E+03
		529.64	30.30	7.91E+02		4.43E+03
		552.65	16.40	1.01E+02		7.93E+03

Analysis Report for 1603102-01

GAS-1302

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	KR-85	513.99	0.43	-6.23E+00	1.05E+02	1.05E+02
+	SR-85	513.99	99.27	-1.17E+03	1.99E+04	1.99E+04
+	Y-88	898.02	93.40	1.63E+02	2.09E+02	5.48E+02
		1836.01	99.38	2.36E+02		2.09E+02
+	NB-93M	16.57	9.43	1.35E+03	5.54E+02	5.54E+02
+	NB-94	702.63	100.00	2.63E-02	4.79E-01	4.79E-01
		871.10	100.00	2.26E-02		6.25E-01
+	NB-95	765.79	99.81	6.10E+07	2.72E+08	2.72E+08
+	@ NB-95M	235.69	25.00	1.00E+26	1.00E+26	1.00E+26
+	ZR-95	724.18	43.70	7.54E+03	5.41E+04	6.62E+04
		756.72	55.30	5.01E+03		5.41E+04
+	@ MO-99	181.06	6.20	1.00E+26	1.00E+26	1.00E+26
	@	739.58	12.80	1.00E+26		1.00E+26
	@	778.00	4.50	1.00E+26		1.00E+26
+	RU-103	497.08	89.00	-1.57E+06	2.54E+07	2.54E+07
+	RU-106	621.84	9.80	2.23E+01	3.24E+01	3.24E+01
+	AG-108M	433.93	89.90	2.09E-01	4.56E-01	4.56E-01
		614.37	90.40	-4.20E-01		5.13E-01
		722.95	90.50	8.90E-02		5.48E-01
+	CD-109	88.03	* 3.72	2.74E+03	5.89E+01	5.89E+01
+	AG-110M	657.75	93.14	7.59E-01	1.53E+01	2.49E+01
		677.61	10.53	4.41E+01		7.51E+01
		706.67	16.46	1.12E+01		4.85E+01
		763.93	21.98	-1.65E+01		3.93E+01
		884.67	71.63	1.83E+00		1.54E+01
		1384.27	23.94	5.02E+00		1.53E+01
+	CD-113M	263.70	0.02	-9.39E+00	1.58E+03	1.58E+03
+	SN-113	255.12	1.93	5.23E+03	3.05E+02	7.59E+03
		391.69	* 64.90	2.58E+02		3.05E+02
+	TE123M	159.00	84.10	4.98E+01	1.11E+02	1.11E+02
+	SB-124	602.71	97.87	2.41E+04	4.65E+04	5.64E+04
		645.85	7.26	-1.46E+04		7.89E+05
		722.78	11.10	8.51E+04		5.23E+05
		1691.02	49.00	-1.83E+04		4.65E+04
+	I-125	35.49	6.49	1.32E+06	1.02E+06	1.02E+06
+	SB-125	176.33	6.89	3.72E+00	2.71E+00	7.98E+00
		427.89	29.33	-4.52E-01		2.71E+00
		463.38	10.35	2.69E+00		8.65E+00
		600.56	17.80	1.14E+00		5.18E+00
		635.90	11.32	4.63E+00		8.55E+00
+	@ SB-126	414.70	83.30	1.00E+26	1.00E+26	1.00E+26
	@	666.33	99.60	1.00E+26		1.00E+26
	@	695.00	99.60	1.00E+26		1.00E+26
	@	720.50	53.80	1.00E+26		1.00E+26
+	SN-126	87.57	* 37.00	6.05E+01	1.30E+00	1.30E+00
+	@ SB-127	473.00	25.00	1.00E+26	1.00E+26	1.00E+26
	@	685.20	35.70	1.00E+26		1.00E+26

Analysis Report for 1603102-01
GAS-1302

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	@ SB-127	783.80	14.70	1.00E+26	1.00E+26	1.00E+26
+	I-129	29.78	57.00	-1.75E+01	1.57E+00	1.57E+00
		33.60	13.20	-3.30E+01		4.69E+00
		39.58	7.52	-9.30E+00		5.93E+00
+	@ I-131	284.30	6.05	1.00E+26	1.00E+26	1.00E+26
	@	364.48	81.20	1.00E+26		1.00E+26
	@	636.97	7.26	1.00E+26		1.00E+26
	@	722.89	1.80	1.00E+26		1.00E+26
+	@ TE-132	49.72	13.10	1.00E+26	1.00E+26	1.00E+26
	@	228.16	88.00	1.00E+26		1.00E+26
+	BA-133	81.00	33.00	2.73E-01	7.02E-01	9.30E-01
		302.84	17.80	-2.51E-01		2.20E+00
		356.01	60.00	9.76E-02		7.02E-01
+	@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26
+	@ XE-133	81.00	38.00	1.00E+26	1.00E+26	1.00E+26
+	CS-134	563.23	8.38	-4.66E+00	1.20E+00	1.13E+01
		569.32	15.43	-8.47E-01		6.20E+00
		604.70	97.60	-8.39E-01		1.20E+00
		795.84	85.40	1.65E+00		1.68E+00
		801.93	8.73	-1.03E+01		1.58E+01
+	CS-135	268.24	16.00	-8.85E-01	1.97E+00	1.97E+00
+	@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41	28.60	1.00E+26		1.00E+26
	@	1678.03	9.54	1.00E+26		1.00E+26
+	@ CS-136	153.22	7.46	1.00E+26	1.00E+26	1.00E+26
	@	163.89	4.61	1.00E+26		1.00E+26
	@	176.55	13.56	1.00E+26		1.00E+26
	@	273.65	12.66	1.00E+26		1.00E+26
	@	340.57	48.50	1.00E+26		1.00E+26
	@	818.50	99.70	1.00E+26		1.00E+26
	@	1048.07	79.60	1.00E+26		1.00E+26
	@	1235.34	19.70	1.00E+26		1.00E+26
+	CS-137	661.65	* 85.12	8.88E+01	9.37E-01	9.37E-01
+	LA-138	788.74	34.00	5.97E-01	3.03E-01	1.60E+00
		1435.80	66.00	7.59E-02		3.03E-01
+	CE-139	165.85	* 80.35	9.74E+01	7.51E+01	7.51E+01
+	@ BA-140	162.64	6.70	1.00E+26	1.00E+26	1.00E+26
	@	304.84	4.50	1.00E+26		1.00E+26
	@	423.70	3.20	1.00E+26		1.00E+26
	@	437.55	2.00	1.00E+26		1.00E+26
	@	537.32	25.00	1.00E+26		1.00E+26
+	@ LA-140	328.77	20.50	1.00E+26	1.00E+26	1.00E+26
	@	487.03	45.50	1.00E+26		1.00E+26
	@	815.85	23.50	1.00E+26		1.00E+26
	@	1596.49	95.49	1.00E+26		1.00E+26
+	CE-141	145.44	48.40	5.42E+08	1.32E+09	1.32E+09
+	@ CE-143	57.36	11.80	1.00E+26	1.00E+26	1.00E+26
	@	293.26	42.00	1.00E+26		1.00E+26

Analysis Report for 1603102-01

GAS-1302

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	@ CE-143	664.55	5.20	1.00E+26	1.00E+26	1.00E+26
+	CE-144	133.54	10.80	4.00E-01	2.93E+01	2.93E+01
+	PM-144	476.78	42.00	-1.39E+00	3.23E+00	6.91E+00
		618.01	98.60	-9.45E-01		3.23E+00
		696.49	99.49	1.53E-01		3.31E+00
+	PM-145	36.85	21.70	3.25E+00	1.39E+00	2.64E+00
		37.36	39.70	1.72E+00		1.39E+00
		42.30	15.10	-4.83E+00		3.23E+00
		72.40	2.31	5.96E+00		1.26E+01
+	PM-146	453.90	39.94	-2.49E-01	1.52E+00	1.52E+00
		735.90	14.01	-7.88E-01		5.09E+00
		747.13	13.10	1.35E+00		5.50E+00
+	@ ND-147	91.11	28.90	1.00E+26	1.00E+26	1.00E+26
	@	531.02	13.10	1.00E+26		1.00E+26
+	@ PM-149	285.90	3.10	1.00E+26	1.00E+26	1.00E+26
+	EU-152	121.78	20.50	2.50E+01	1.61E+00	2.12E+00
		244.69	5.40	-3.65E+00		6.84E+00
		344.27	19.13	3.23E-01		2.06E+00
		778.89	9.20	-2.68E-02		6.60E+00
		964.01	10.40	-1.18E-01		8.18E+00
		1085.78	7.22	3.33E+00		1.13E+01
		1112.02	9.60	2.48E+00		8.51E+00
		1407.95	14.94	5.58E-01		1.61E+00
+	GD-153	97.43	31.30	5.84E+00	1.40E+01	1.40E+01
		103.18	22.20	-6.93E+00		1.98E+01
+	EU-154	123.07	40.50	1.33E+01	1.05E+00	1.16E+00
		723.30	19.70	5.02E-01		3.08E+00
		873.19	11.50	-2.18E+00		6.78E+00
		996.32	10.30	-2.57E+00		8.09E+00
		1004.76	17.90	4.31E-01		4.69E+00
		1274.45	35.50	-7.50E-02		1.05E+00
+	EU-155	86.50	30.90	1.10E+02	1.72E+00	3.32E+00
		105.30	20.70	-6.69E-01		1.72E+00
+	@ EU-156	811.77	10.40	1.00E+26	1.00E+26	1.00E+26
	@	1153.47	7.20	1.00E+26		1.00E+26
	@	1230.71	8.90	1.00E+26		1.00E+26
+	HO-166M	184.41	72.60	8.73E-02	3.94E-01	3.94E-01
		280.45	29.60	-2.44E-01		1.08E+00
		410.94	11.10	1.34E+00		3.49E+00
		711.69	54.10	-6.38E-01		8.65E-01
+	TM-171	66.72	0.14	5.35E+02	5.40E+02	5.40E+02
+	HF-172	81.75	4.52	-2.92E-01	6.08E+00	1.58E+01
		125.81	11.30	-7.69E-01		6.08E+00
+	@ LU-172	181.53	20.60	1.00E+26	1.00E+26	1.00E+26
	@	810.06	16.63	1.00E+26		1.00E+26
	@	912.12	15.25	1.00E+26		1.00E+26
	@	1093.66	62.50	1.00E+26		1.00E+26
+	LU-173	100.72	5.24	1.30E+00	6.23E+00	1.87E+01
		272.11	21.20	6.85E-01		6.23E+00

Analysis Report for 1603102-01

GAS-1302

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	HF-175	343.40	84.00	-5.79E+03	9.39E+03	9.39E+03
+	LU-176	88.34	13.30	1.74E+02	3.42E-01	5.17E+00
		201.83	86.00	-6.24E-02		3.42E-01
		306.78	94.00	2.09E-02		3.53E-01
+	TA-182	67.75	41.20	1.47E+02	3.14E+02	3.14E+02
		1121.30	34.90	-1.25E+02		8.43E+02
		1189.05	16.23	-7.99E+01		1.31E+03
		1221.41	26.98	-1.39E+02		6.53E+02
		1231.02	11.44	1.58E+02		1.48E+03
+	IR-192	308.46	29.68	-1.08E+04	1.24E+04	1.50E+04
		468.07	48.10	-1.73E+02		1.24E+04
+	HG-203	279.19	77.30	3.22E+04	1.48E+06	1.48E+06
+	BI-207	569.67	97.72	-5.57E-02	4.08E-01	4.08E-01
		1063.62	74.90	1.27E-01		9.65E-01
+	TL-208	583.14	* 30.22	9.30E-01	4.53E-02	1.51E+00
		860.37	4.48	1.56E+00		1.39E+01
		2614.66	* 35.85	3.18E-01		4.53E-02
+	BI-210M	262.00	45.00	-1.74E-01	7.12E-01	7.12E-01
		300.00	23.00	1.17E+00		1.43E+00
+	PB-210	46.50	4.25	-8.04E+01	1.28E+01	1.28E+01
+	PB-211	404.84	2.90	2.78E+00	1.32E+01	1.32E+01
		831.96	2.90	6.66E+00		2.02E+01
+	BI-212	727.17	11.80	-3.68E-01	4.12E+00	4.12E+00
		1620.62	2.75	-2.47E-01		7.43E+00
+	PB-212	238.63	* 44.60	4.56E-01	6.39E-01	6.39E-01
		300.09	3.41	7.88E+00		9.63E+00
+	BI-214	609.31	46.30	5.82E-01	1.02E+00	1.02E+00
		1120.29	15.10	-3.18E-01		4.24E+00
		1764.49	15.80	1.15E+00		1.39E+00
		2204.22	4.98	8.11E-01		3.86E+00
+	PB-214	295.21	19.19	-5.76E-01	9.51E-01	1.69E+00
		351.92	37.19	-3.94E-02		9.51E-01
+	RN-219	401.80	6.50	-1.49E+00	5.80E+00	5.80E+00
+	RA-223	323.87	3.88	-6.16E+00	8.53E+00	8.53E+00
+	RA-224	240.98	3.95	3.18E+00	8.28E+00	8.28E+00
+	@ RA-225	40.00	31.00	1.00E+26	1.00E+26	1.00E+26
+	RA-226	186.21	3.28	-3.27E+00	8.80E+00	8.80E+00
+	TH-227	50.10	8.40	2.70E+01	2.86E+00	7.06E+00
		236.00	11.50	1.55E+00		2.86E+00
		256.20	6.30	1.37E+00		5.18E+00
+	AC-228	338.32	11.40	1.64E+00	2.56E+00	3.06E+00
		911.07	27.70	1.25E+00		2.56E+00
		969.11	16.60	-1.02E+00		4.15E+00
+	TH-230	48.44	16.90	1.08E+01	3.52E+00	3.52E+00
		62.85	4.60	-3.88E+00		5.31E+00
		67.67	0.37	3.50E+01		7.48E+01
+	PA-231	283.67	1.60	1.91E+01	1.42E+01	2.04E+01
		302.67	2.30	-1.61E+00		1.42E+01

Analysis Report for 1603102-01

GAS-1302

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TH-231	25.64	14.70	1.14E+03	4.11E+00	3.67E+01
		84.21	6.40	-3.07E-03		4.11E+00
+	PA-233	311.98	38.60	1.40E+11	1.78E+11	1.78E+11
+	PA-234	131.20	20.40	-2.39E-01	1.23E+00	1.23E+00
		733.99	8.80	-2.16E+00		5.61E+00
		946.00	12.00	-2.15E+00		6.30E+00
+	PA-234M	1001.03	0.92	1.12E+01	7.30E+01	7.30E+01
+	TH-234	63.29	3.80	-4.68E+00	6.40E+00	6.40E+00
+	U-235	143.76	10.50	1.69E-01	2.41E+00	2.41E+00
		163.35	4.70	-1.34E+00		5.70E+00
		205.31	4.70	1.87E+00		6.39E+00
+	NP-237	86.50	12.60	1.84E+02	5.53E+00	5.53E+00
+	@ NP-239	106.10	22.70	1.00E+26	1.00E+26	1.00E+26
	@	228.18	10.70	1.00E+26		1.00E+26
	@	277.60	14.10	1.00E+26		1.00E+26
+	AM-241	59.54	* 35.90	1.88E+02	3.02E+00	3.02E+00
+	AM-243	74.67	66.00	-1.27E-01	3.90E-01	3.90E-01
+	CM-243	209.75	3.29	-1.92E+00	2.43E+00	1.01E+01
		228.14	10.60	2.41E-01		3.27E+00
		277.60	14.00	5.54E-01		2.43E+00

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = MDA value not calculated

@ = Half-life too short to be able to perform the decay correction

? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BE-7	477.59	10.42	2.10E+06	2.10E+06	-4.21E+05	1.03E+06

Analysis Report for 1603102-01

GAS-1302

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
NA-22	1274.54	99.94	6.27E-01	6.27E-01	-4.49E-02	3.01E-01
@ NA-24	1368.53	99.99	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	2754.09	99.86	1.00E+26		0.00E+00	1.00E+20
AL-26	1808.65	99.76	2.16E-01	2.16E-01	-3.05E-02	1.01E-01
K-40	1460.81	10.67	1.94E+00	1.94E+00	-6.61E-01	9.10E-01
@ AR-41	1293.64	99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
TI-44	67.88	94.40	3.02E-01	2.73E-01	1.41E-01	1.50E-01
	78.34	96.00	2.73E-01		-4.92E-02	1.36E-01
SC-46	889.25	99.98	2.93E+03	2.82E+03	9.49E+01	1.45E+03
	1120.51	99.99	2.82E+03		-2.12E+02	1.39E+03
V-48	983.52	99.98	9.01E+18	4.30E+18	-6.60E+18	4.44E+18
	1312.10	97.50	4.30E+18		-2.29E+18	2.07E+18
CR-51	320.08	9.83	3.63E+11	3.63E+11	1.72E+11	1.79E+11
MN-54	834.83	99.97	5.62E+00	5.62E+00	3.63E+00	2.77E+00
CO-56	846.75	99.96	4.53E+03	1.98E+03	-1.03E+03	2.23E+03
	1037.75	14.03	3.66E+04		1.78E+04	1.80E+04
	1238.25	67.00	3.80E+03		-6.51E+02	1.83E+03
	1771.40	15.51	9.85E+03		-2.14E+03	4.57E+03
	2598.48	16.90	1.98E+03		2.69E+02	6.27E+02
+ CO-57	122.06	* 85.51	5.41E+00	5.41E+00	7.20E+01	2.69E+00
	135.48	* 10.60	4.45E+01		6.33E+01	2.21E+01
CO-58	810.76	99.40	1.18E+04	1.18E+04	1.44E+03	5.79E+03
FE-59	1099.22	56.50	8.86E+06	4.65E+06	9.16E+05	4.36E+06
	1291.55	43.20	4.65E+06		-1.82E+05	2.23E+06
+ CO-60	1173.22	* 100.00	1.14E+00	7.44E-01	1.38E+02	5.62E-01
	1332.49	* 100.00	7.44E-01		1.38E+02	3.63E-01
ZN-65	1115.52	50.75	2.47E+01	2.47E+01	3.63E+01	1.22E+01
@ GA-67	93.31	35.70	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	208.95	2.24	1.00E+26		1.00E+26	1.00E+20
@	300.22	16.00	1.00E+26		1.00E+26	1.00E+20
SE-75	121.11	16.70	8.10E+02	1.63E+02	9.76E+03	4.02E+02
	136.00	59.20	1.63E+02		3.27E+02	8.10E+01
	264.65	59.80	1.88E+02		6.42E+01	9.30E+01
	279.53	25.20	4.49E+02		-1.02E+02	2.22E+02
	400.65	11.40	1.18E+03		-3.75E+01	5.82E+02
RB-82	776.52	13.00	3.73E+12	3.73E+12	6.37E+11	1.84E+12
RB-83	520.41	46.00	2.87E+03	2.87E+03	-5.36E+02	1.41E+03
	529.64	30.30	4.43E+03		7.91E+02	2.18E+03
	552.65	16.40	7.93E+03		1.01E+02	3.90E+03
KR-85	513.99	0.43	1.05E+02	1.05E+02	-6.23E+00	5.20E+01
SR-85	513.99	99.27	1.99E+04	1.99E+04	-1.17E+03	9.79E+03
Y-88	898.02	93.40	5.48E+02	2.09E+02	1.63E+02	2.70E+02
	1836.01	99.38	2.09E+02		2.36E+02	9.91E+01
NB-93M	16.57	9.43	5.54E+02	5.54E+02	1.35E+03	2.75E+02
NB-94	702.63	100.00	4.79E-01	4.79E-01	2.63E-02	2.36E-01
	871.10	100.00	6.25E-01		2.26E-02	3.08E-01
NB-95	765.79	99.81	2.72E+08	2.72E+08	6.10E+07	1.34E+08
@ NB-95M	235.69	25.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
ZR-95	724.18	43.70	6.62E+04	5.41E+04	7.54E+03	3.26E+04
	756.72	55.30	5.41E+04		5.01E+03	2.66E+04
@ MO-99	181.06	6.20	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	739.58	12.80	1.00E+26		1.00E+26	1.00E+20
@	778.00	4.50	1.00E+26		1.00E+26	1.00E+20

Analysis Report for 1603102-01

GAS-1302

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
RU-103	497.08	89.00	2.54E+07	2.54E+07	-1.57E+06	1.25E+07
RU-106	621.84	9.80	3.24E+01	3.24E+01	2.23E+01	1.60E+01
AG-108M	433.93	89.90	4.56E-01	4.56E-01	2.09E-01	2.25E-01
	614.37	90.40	5.13E-01		-4.20E-01	2.53E-01
	722.95	90.50	5.48E-01		8.90E-02	2.70E-01
+ CD-109	88.03 *	3.72	5.89E+01	5.89E+01	2.74E+03	2.93E+01
AG-110M	657.75	93.14	2.49E+01	1.53E+01	7.59E-01	1.24E+01
	677.61	10.53	7.51E+01		4.41E+01	3.70E+01
	706.67	16.46	4.85E+01		1.12E+01	2.39E+01
	763.93	21.98	3.93E+01		-1.65E+01	1.93E+01
	884.67	71.63	1.54E+01		1.83E+00	7.62E+00
	1384.27	23.94	1.53E+01		5.02E+00	7.23E+00
CD-113M	263.70	0.02	1.58E+03	1.58E+03	-9.39E+00	7.82E+02
+ SN-113	255.12	1.93	7.59E+03	3.05E+02	5.23E+03	3.76E+03
	391.69 *	64.90	3.05E+02		2.58E+02	1.51E+02
TE-123M	159.00	84.10	1.11E+02	1.11E+02	4.98E+01	5.47E+01
SB-124	602.71	97.87	5.64E+04	4.65E+04	2.41E+04	2.78E+04
	645.85	7.26	7.89E+05		-1.46E+04	3.89E+05
	722.78	11.10	5.23E+05		8.51E+04	2.58E+05
	1691.02	49.00	4.65E+04		-1.83E+04	2.15E+04
I-125	35.49	6.49	1.02E+06	1.02E+06	1.32E+06	5.05E+05
SB-125	176.33	6.83	7.98E+00	2.71E+00	3.72E+00	3.95E+00
	427.89	29.33	2.71E+00		-4.52E-01	1.34E+00
	463.38	10.35	8.65E+00		2.69E+00	4.28E+00
	600.56	17.80	5.18E+00		1.14E+00	2.55E+00
	635.90	11.32	8.55E+00		4.63E+00	4.21E+00
@ SB-126	414.70	83.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	666.33	99.60	1.00E+26		1.00E+26	1.00E+20
@	695.00	99.60	1.00E+26		1.00E+26	1.00E+20
@	720.50	53.80	1.00E+26		1.00E+26	1.00E+20
+ SN-126	87.57 *	37.00	1.30E+00	1.30E+00	6.05E+01	6.47E-01
@ SB-127	473.00	25.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	685.20	35.70	1.00E+26		1.00E+26	1.00E+20
@	783.80	14.70	1.00E+26		1.00E+26	1.00E+20
I-129	29.78	57.00	1.57E+00	1.57E+00	-1.75E+01	7.78E-01
	33.60	13.20	4.69E+00		-3.30E+01	2.32E+00
	39.58	7.52	5.93E+00		-9.30E+00	2.94E+00
@ I-131	284.30	6.05	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	364.48	81.20	1.00E+26		1.00E+26	1.00E+20
@	636.97	7.26	1.00E+26		1.00E+26	1.00E+20
@	722.89	1.80	1.00E+26		1.00E+26	1.00E+20
@ TE-132	49.72	13.10	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	228.16	88.00	1.00E+26		1.00E+26	1.00E+20
BA-133	81.00	33.00	9.30E-01	7.02E-01	2.73E-01	4.61E-01
	302.85	17.80	2.20E+00		-2.51E-01	1.09E+00
	356.01	60.00	7.02E-01		9.76E-02	3.47E-01
@ I-133	529.87	86.30	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@ XE-133	81.00	38.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
CS-134	563.23	8.38	1.13E+01	1.20E+00	-4.66E+00	5.55E+00
	569.32	15.43	6.20E+00		-8.47E-01	3.05E+00
	604.70	97.60	1.20E+00		-8.39E-01	5.93E-01
	795.84	85.40	1.68E+00		1.65E+00	8.30E-01
	801.93	8.73	1.58E+01		-1.03E+01	7.80E+00

Analysis Report for 1603102-01

GAS-1302

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
CS-135	268.24	16.00	1.97E+00	1.97E+00	-8.85E-01	9.75E-01
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41	28.60	1.00E+26		1.00E+26	1.00E+20
@	1678.03	9.54	1.00E+26		1.00E+26	1.00E+20
@ CS-136	153.22	7.46	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	163.89	4.61	1.00E+26		1.00E+26	1.00E+20
@	176.55	13.56	1.00E+26		1.00E+26	1.00E+20
@	273.65	12.66	1.00E+26		1.00E+26	1.00E+20
@	340.57	48.50	1.00E+26		1.00E+26	1.00E+20
@	818.50	99.70	1.00E+26		1.00E+26	1.00E+20
@	1048.07	79.60	1.00E+26		1.00E+26	1.00E+20
@	1235.34	19.70	1.00E+26		1.00E+26	1.00E+20
+ CS-137	661.65	*	85.12	9.37E-01	8.88E+01	4.64E-01
LA-138	788.74	34.00	1.60E+00	3.03E-01	5.97E-01	7.89E-01
	1435.80	66.00	3.03E-01		7.59E-02	1.42E-01
+ CE-139	165.85	*	80.35	7.51E+01	9.74E+01	3.73E+01
@ BA-140	162.64	6.70	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	304.84	4.50	1.00E+26		1.00E+26	1.00E+20
@	423.70	3.20	1.00E+26		1.00E+26	1.00E+20
@	437.55	2.00	1.00E+26		1.00E+26	1.00E+20
@	537.32	25.00	1.00E+26		1.00E+26	1.00E+20
@ LA-140	328.77	20.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	487.03	45.50	1.00E+26		1.00E+26	1.00E+20
@	815.85	23.50	1.00E+26		1.00E+26	1.00E+20
@	1596.49	95.49	1.00E+26		1.00E+26	1.00E+20
CE-141	145.44	48.40	1.32E+09	1.32E+09	5.42E+08	6.55E+08
@ CE-143	57.36	11.80	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	293.26	42.00	1.00E+26		1.00E+26	1.00E+20
@	664.55	5.20	1.00E+26		1.00E+26	1.00E+20
CE-144	133.54	10.80	2.93E+01	2.93E+01	4.00E-01	1.45E+01
PM-144	476.78	42.00	6.91E+00	3.23E+00	-1.39E+00	3.41E+00
	618.01	98.60	3.23E+00		-9.45E-01	1.59E+00
	696.49	99.49	3.31E+00		1.53E-01	1.63E+00
PM-145	36.85	21.70	2.64E+00	1.39E+00	3.25E+00	1.30E+00
	37.36	39.70	1.39E+00		1.72E+00	6.88E-01
	42.30	15.10	3.23E+00		-4.83E+00	1.60E+00
	72.40	2.31	1.26E+01		5.96E+00	6.25E+00
PM-146	453.90	39.94	1.52E+00	1.52E+00	-2.49E-01	7.49E-01
	735.90	14.01	5.09E+00		-7.88E-01	2.51E+00
	747.13	13.10	5.50E+00		1.35E+00	2.71E+00
@ ND-147	91.11	28.90	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	531.02	13.10	1.00E+26		1.00E+26	1.00E+20
@ PM-149	285.90	3.10	1.00E+26	1.00E+26	1.00E+26	1.00E+20
EU-152	121.78	20.50	2.12E+00	1.61E+00	2.50E+01	1.06E+00
	244.69	5.40	6.84E+00		-3.65E+00	3.38E+00
	344.27	19.13	2.06E+00		3.23E-01	1.02E+00
	778.89	9.20	6.60E+00		-2.68E-02	3.25E+00
	964.01	10.40	8.18E+00		-1.18E-01	4.04E+00
	1085.78	7.22	1.13E+01		3.33E+00	5.55E+00
	1112.02	9.60	8.51E+00		2.48E+00	4.19E+00
	1407.95	14.94	1.61E+00		5.58E-01	7.54E-01
GD-153	97.43	31.30	1.40E+01	1.40E+01	5.84E+00	6.93E+00
	103.18	22.20	1.98E+01		-6.93E+00	9.83E+00

Analysis Report for 1603102-01

GAS-1302

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
EU-154	123.07	40.50	1.16E+00	1.05E+00	1.33E+01	5.76E-01
	723.30	19.70	3.08E+00		5.02E-01	1.52E+00
	873.19	11.50	6.78E+00		-2.18E+00	3.34E+00
	996.32	10.30	8.09E+00		-2.57E+00	3.98E+00
	1004.76	17.90	4.69E+00		4.31E-01	2.31E+00
	1274.45	35.50	1.05E+00		-7.50E-02	5.03E-01
EU-155	86.50	30.90	3.32E+00	1.72E+00	1.10E+02	1.66E+00
	105.30	20.70	1.72E+00		-6.69E-01	8.51E-01
@ EU-156	811.77	10.40	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1153.47	7.20	1.00E+26		1.00E+26	1.00E+20
@	1230.71	8.90	1.00E+26		1.00E+26	1.00E+20
HO-166M	184.41	72.60	3.94E-01	3.94E-01	8.73E-02	1.95E-01
	280.45	29.60	1.08E+00		-2.44E-01	5.34E-01
	410.94	11.10	3.49E+00		1.34E+00	1.73E+00
	711.69	54.10	8.65E-01		-6.38E-01	4.26E-01
TM-171	66.72	0.14	5.40E+02	5.40E+02	5.35E+02	2.68E+02
HF-172	81.75	4.52	1.58E+01	6.08E+00	-2.92E-01	7.84E+00
	125.81	11.30	6.08E+00		-7.69E-01	3.01E+00
	181.53	20.60	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	810.06	16.63	1.00E+26		1.00E+26	1.00E+20
@	912.12	15.25	1.00E+26		1.00E+26	1.00E+20
@	1093.66	62.50	1.00E+26		1.00E+26	1.00E+20
LU-173	100.72	5.24	1.87E+01	6.23E+00	1.30E+00	9.28E+00
	272.11	21.20	6.23E+00		6.85E-01	3.08E+00
HF-175	343.40	84.00	9.39E+03	9.39E+03	-5.79E+03	4.64E+03
LU-176	88.34	13.30	5.17E+00	3.42E-01	1.74E+02	2.58E+00
	201.83	86.00	3.42E-01		-6.24E-02	1.69E-01
	306.78	94.00	3.53E-01		2.09E-02	1.75E-01
TA-182	67.75	41.20	3.14E+02	3.14E+02	1.47E+02	1.56E+02
	1121.30	34.90	8.43E+02		-1.25E+02	4.14E+02
	1189.05	16.23	1.31E+03		-7.99E+01	6.40E+02
	1221.41	26.98	6.53E+02		-1.39E+02	3.16E+02
	1231.02	11.44	1.48E+03		1.58E+02	7.16E+02
IR-192	308.46	29.68	1.50E+04	1.24E+04	-1.08E+04	7.43E+03
	468.07	48.10	1.24E+04		-1.73E+02	6.14E+03
HG-203	279.19	77.30	1.48E+06	1.48E+06	3.22E+04	7.34E+05
BI-207	569.67	97.72	4.08E-01	4.08E-01	-5.57E-02	2.01E-01
	1063.62	74.90	9.65E-01		1.27E-01	4.75E-01
+ TL-208	583.14	*	1.51E+00	4.53E-02	9.30E-01	7.47E-01
	860.37		1.39E+01		1.56E+00	6.86E+00
	2614.66	*	4.53E-02		3.18E-01	0.00E+00
BI-210M	262.00	45.00	7.12E-01	7.12E-01	-1.74E-01	3.52E-01
	300.00	23.00	1.43E+00		1.17E+00	7.06E-01
PB-210	46.50	4.25	1.28E+01	1.28E+01	-8.04E+01	6.36E+00
PB-211	404.84	2.90	1.32E+01	1.32E+01	2.78E+00	6.53E+00
	831.96	2.90	2.02E+01		6.66E+00	9.96E+00
BI-212	727.17	11.80	4.12E+00	4.12E+00	-3.68E-01	2.03E+00
	1620.62	2.75	7.43E+00		-2.47E-01	3.46E+00
+ PB-212	238.63	*	6.39E-01	6.39E-01	4.56E-01	3.16E-01
	300.09		9.63E+00		7.88E+00	4.76E+00
BI-214	609.31	46.30	1.02E+00	1.02E+00	5.82E-01	5.05E-01
	1120.29	15.10	4.24E+00		-3.18E-01	2.08E+00
	1764.49	15.80	1.39E+00		1.15E+00	6.48E-01

Analysis Report for 1603102-01
GAS-1302

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BI-214	2204.22	4.98	3.86E+00	1.02E+00	8.11E-01	1.77E+00
PB-214	295.21	19.19	1.69E+00	9.51E-01	-5.76E-01	8.35E-01
	351.92	37.19	9.51E-01		-3.94E-02	4.70E-01
RN-219	401.80	6.50	5.80E+00	5.80E+00	-1.49E+00	2.87E+00
RA-223	323.87	3.88	8.53E+00	8.53E+00	-6.16E+00	4.21E+00
RA-224	240.98	3.95	8.28E+00	8.28E+00	3.18E+00	4.10E+00
@ RA-225	40.00	31.00	1.00E+26	1.00E+26	1.00E+26	1.00E+20
RA-226	186.21	3.28	8.80E+00	8.80E+00	-3.27E+00	4.36E+00
TH-227	50.10	8.40	7.06E+00	2.86E+00	2.70E+01	3.51E+00
	236.00	11.50	2.86E+00		1.55E+00	1.41E+00
	256.20	6.30	5.18E+00		1.37E+00	2.56E+00
AC-228	338.32	11.40	3.06E+00	2.56E+00	1.64E+00	1.51E+00
	911.07	27.70	2.56E+00		1.25E+00	1.26E+00
	969.11	16.60	4.15E+00		-1.02E+00	2.04E+00
TH-230	48.44	16.90	3.52E+00	3.52E+00	1.08E+01	1.75E+00
	62.85	4.60	5.31E+00		-3.88E+00	2.63E+00
	67.67	0.37	7.48E+01		3.50E+01	3.71E+01
PA-231	283.67	1.60	2.04E+01	1.42E+01	1.91E+01	1.01E+01
	302.67	2.30	1.42E+01		-1.61E+00	7.00E+00
TH-231	25.64	14.70	3.67E+01	4.11E+00	1.14E+03	1.83E+01
	84.21	6.40	4.11E+00		-3.07E-03	2.04E+00
PA-233	311.98	38.60	1.78E+11	1.78E+11	1.40E+11	8.81E+10
PA-234	131.20	20.40	1.23E+00	1.23E+00	-2.39E-01	6.07E-01
	733.99	8.80	5.61E+00		-2.16E+00	2.76E+00
	946.00	12.00	6.30E+00		-2.15E+00	3.11E+00
PA-234M	1001.03	0.92	7.30E+01	7.30E+01	1.12E+01	3.60E+01
TH-234	63.29	3.80	6.40E+00	6.40E+00	-4.68E+00	3.17E+00
U-235	143.76	10.50	2.41E+00	2.41E+00	1.69E-01	1.20E+00
	163.35	4.70	5.70E+00		-1.34E+00	2.82E+00
	205.31	4.70	6.39E+00		1.87E+00	3.16E+00
NP-237	86.50	12.60	5.53E+00	5.53E+00	1.84E+02	2.75E+00
@ NP-239	106.10	22.70	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	228.18	10.70	1.00E+26		1.00E+26	1.00E+20
@	277.60	14.10	1.00E+26		1.00E+26	1.00E+20
+ AM-241	59.54	* 35.90	3.02E+00	3.02E+00	1.88E+02	1.51E+00
AM-243	74.67	66.00	3.90E-01	3.90E-01	-1.27E-01	1.93E-01
CM-243	209.75	3.29	1.01E+01	2.43E+00	-1.92E+00	4.98E+00
	228.14	10.60	3.27E+00		2.41E-01	1.62E+00
	277.60	14.00	2.43E+00		5.54E-01	1.20E+00

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = MDA value not calculated

@ = Half-life too short to be able to perform the decay correction

Analysis Report for 1603102-01
GAS-1302

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date

Comment

User

No Data Review Comments Entered.

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: GAS-1302

Elapsed Live time: 1800

Elapsed Real Time: 1826

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	2	85	1194	1630
9:	1504	1494	2235	6765	2504	1823	2190	1260
17:	1767	2450	1102	2004	6806	69700	9280	3943
25:	21358	3868	1046	676	718	819	1031	2378
33:	1148	828	802	1148	1072	988	1033	1159
41:	1234	1448	1673	1865	1957	2085	2498	3338
49:	4492	4942	4446	4215	4291	4375	4550	4893
57:	5175	5596	50420	34580	1169	1162	1191	1254
65:	1382	1582	1705	1703	1643	1656	1561	1584
73:	1598	1499	1631	1557	1597	1601	1496	1597
81:	1585	1603	1597	1775	1750	1762	4939	26023
89:	1784	854	836	843	870	819	803	810
97:	794	838	878	818	802	831	849	827
105:	799	859	794	861	803	859	846	849
113:	876	813	809	828	868	868	893	878
121:	1414	5367	978	742	754	797	739	798
129:	805	725	764	781	774	758	798	1203
137:	939	729	751	772	747	740	702	748
145:	721	736	711	674	687	708	716	696
153:	733	673	712	691	659	708	680	727
161:	705	657	710	696	814	987	705	680
169:	662	694	673	724	680	682	697	658
177:	701	713	654	678	698	702	717	719
185:	691	720	697	752	750	750	717	781
193:	747	751	733	682	726	710	700	625
201:	670	665	663	757	676	679	676	680
209:	756	720	712	693	754	789	751	726
217:	777	796	767	731	730	726	761	710
225:	732	729	740	727	648	665	676	691
233:	664	683	704	664	619	780	699	628
241:	643	690	669	635	610	600	613	630
249:	610	590	596	561	561	641	617	600
257:	612	577	618	572	571	578	575	552
265:	558	508	544	500	558	562	555	545
273:	551	550	540	501	526	535	511	517
281:	485	522	524	577	496	518	480	535
289:	482	500	500	494	508	470	537	479
297:	469	518	482	500	502	474	449	455
305:	528	478	462	495	492	510	516	454
313:	432	477	410	466	429	468	502	445
321:	491	423	454	448	474	453	477	460
329:	448	495	452	424	457	451	457	451
337:	492	465	454	492	439	404	453	465
345:	426	446	427	430	434	429	446	504
353:	452	446	473	437	458	388	423	434
361:	404	424	461	421	422	412	450	438

369: 457 419 451 436 440 398 419 427

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	446	441	476	433	421	425	421	414
385:	405	449	444	454	410	408	496	459
393:	431	411	397	382	434	428	445	399
401:	408	449	441	431	431	438	433	410
409:	412	424	439	449	444	408	419	443
417:	417	448	387	420	462	413	432	445
425:	445	454	435	409	446	399	408	452
433:	430	390	444	450	435	404	475	387
441:	395	431	469	418	485	438	425	475
449:	447	501	417	455	435	441	457	485
457:	497	431	447	460	466	486	468	517
465:	468	463	488	479	477	442	454	458
473:	437	449	387	409	403	399	409	400
481:	375	367	351	328	340	351	358	331
489:	314	353	339	334	345	321	339	357
497:	318	317	293	310	337	324	327	304
505:	334	319	306	274	302	338	380	334
513:	297	284	292	282	306	280	270	291
521:	276	293	269	301	289	275	313	291
529:	270	269	282	258	295	288	269	248
537:	281	294	282	278	245	261	271	246
545:	256	254	264	238	252	244	242	238
553:	287	234	259	243	266	230	262	265
561:	234	248	260	229	241	249	253	247
569:	221	255	243	251	250	241	244	248
577:	248	250	231	238	225	264	272	276
585:	240	240	227	249	222	242	242	272
593:	232	208	226	243	241	238	224	251
601:	240	230	258	234	234	255	217	246
609:	278	258	235	251	230	233	231	225
617:	191	242	233	229	242	252	225	239
625:	234	218	218	230	235	229	239	206
633:	243	207	244	245	236	239	274	237
641:	221	228	220	214	248	241	244	228
649:	242	251	233	252	236	258	236	247
657:	231	226	245	895	11379	14589	1561	228
665:	202	197	203	183	218	201	184	185
673:	199	194	228	188	221	200	215	214
681:	195	194	186	202	199	176	208	181
689:	190	199	205	178	199	226	189	191
697:	196	196	204	220	189	191	215	197
705:	190	198	206	197	184	197	191	169
713:	181	191	194	221	198	187	190	214
721:	192	210	203	211	168	197	209	191
729:	191	201	183	199	218	178	227	204
737:	181	191	244	226	193	217	207	196
745:	206	236	197	201	212	187	185	193
753:	179	170	188	219	240	184	204	209
761:	192	215	214	216	197	198	195	228
769:	213	203	202	220	215	199	229	217
777:	193	192	231	210	196	200	203	196
785:	215	229	203	214	217	218	211	204
793:	216	243	245	219	225	207	244	203

801: 193 188 224 197 209 232 231 225

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
809:	221	227	219	202	223	209	223	236
817:	222	230	233	202	221	229	228	212
825:	228	210	201	221	230	205	217	226
833:	235	244	241	219	233	226	206	228
841:	216	230	214	206	218	214	244	240
849:	278	200	230	244	227	238	238	248
857:	252	242	226	247	249	230	265	222
865:	258	273	224	233	229	265	237	222
873:	239	258	228	237	258	269	244	264
881:	276	273	251	233	258	287	268	264
889:	266	240	249	265	264	283	258	266
897:	253	334	309	299	272	289	265	257
905:	310	298	258	302	308	269	302	278
913:	285	279	276	267	287	293	303	311
921:	296	306	316	332	296	295	302	304
929:	288	302	310	294	278	277	329	293
937:	317	297	284	311	339	262	328	308
945:	293	320	304	310	297	338	328	319
953:	324	288	299	321	330	327	316	323
961:	308	320	301	280	287	253	247	232
969:	293	216	237	238	226	232	249	233
977:	227	256	253	206	226	247	223	219
985:	214	220	220	244	242	220	224	234
993:	227	235	225	225	208	205	223	223
1001:	237	212	201	247	216	219	220	221
1009:	212	245	215	237	220	226	203	211
1017:	223	240	244	234	198	222	213	221
1025:	203	205	199	204	222	224	227	200
1033:	219	226	222	215	193	213	216	203
1041:	205	181	188	235	179	196	210	202
1049:	223	224	212	190	202	221	212	194
1057:	199	185	197	189	202	191	213	190
1065:	235	226	220	206	228	198	211	207
1073:	171	203	204	182	177	200	196	214
1081:	190	230	214	197	197	212	220	228
1089:	214	205	189	213	189	207	211	227
1097:	207	215	215	202	224	208	204	222
1105:	205	195	208	201	220	192	178	243
1113:	211	221	191	200	195	173	164	147
1121:	169	182	134	156	142	138	141	129
1129:	123	135	141	130	141	142	120	121
1137:	124	131	132	134	121	114	130	128
1145:	136	107	127	129	115	121	124	114
1153:	103	119	124	139	123	110	119	119
1161:	137	117	115	126	109	103	117	97
1169:	129	121	255	2355	10859	8974	1424	114
1177:	86	78	87	85	100	81	86	77
1185:	93	74	88	71	80	81	65	70
1193:	72	69	69	92	87	68	68	68
1201:	69	51	64	52	59	59	64	63
1209:	56	62	44	62	49	51	56	55
1217:	49	55	53	53	48	49	38	47
1225:	60	43	62	40	48	41	41	51

1233: 40 51 36 36 34 47 44 35

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1241:	33	26	45	33	42	26	23	32
1249:	33	24	28	36	30	30	34	37
1257:	28	27	38	35	28	25	34	27
1265:	32	33	26	32	29	31	29	25
1273:	30	32	34	28	21	26	31	23
1281:	21	37	29	26	24	31	28	25
1289:	24	25	25	28	32	19	26	20
1297:	30	25	27	31	22	31	25	28
1305:	24	28	31	23	36	27	41	29
1313:	24	27	20	38	40	29	34	28
1321:	37	34	36	37	30	34	33	44
1329:	28	91	1079	7012	10026	2945	206	23
1337:	21	12	17	14	21	9	13	13
1345:	15	13	15	10	3	16	8	14
1353:	16	13	14	11	22	12	10	8
1361:	8	11	7	15	14	9	13	13
1369:	11	22	10	16	12	9	7	11
1377:	8	16	12	11	16	9	14	10
1385:	15	18	10	11	10	12	11	16
1393:	16	14	15	14	9	12	15	9
1401:	12	11	8	8	11	12	10	12
1409:	17	10	8	10	10	9	5	17
1417:	8	17	9	5	12	12	9	7
1425:	4	15	10	4	12	9	7	18
1433:	11	10	8	6	8	10	10	8
1441:	9	17	15	9	10	10	9	10
1449:	12	11	10	13	11	3	12	12
1457:	8	5	13	13	15	13	8	14
1465:	13	9	15	10	4	7	13	6
1473:	17	10	7	13	5	6	13	10
1481:	8	12	10	8	4	10	12	13
1489:	11	5	6	15	10	9	8	7
1497:	10	15	5	15	11	8	11	4
1505:	5	7	4	8	13	15	6	11
1513:	8	12	7	13	4	6	7	11
1521:	13	10	9	7	2	5	9	14
1529:	7	9	9	8	9	7	10	3
1537:	9	4	9	7	8	5	8	10
1545:	10	10	7	6	11	8	8	11
1553:	9	8	8	12	6	4	5	8
1561:	10	3	7	6	4	7	10	13
1569:	9	6	10	5	10	1	13	3
1577:	9	11	8	11	8	9	11	8
1585:	9	11	7	5	12	16	6	7
1593:	8	11	7	8	8	8	6	5
1601:	8	9	8	10	10	10	8	4
1609:	6	4	5	12	6	5	12	6
1617:	3	9	11	4	10	8	4	8
1625:	7	5	6	4	4	7	8	14
1633:	7	8	7	6	12	5	4	6
1641:	5	8	7	4	4	5	10	3
1649:	6	4	8	8	6	5	6	8
1657:	6	6	4	8	7	11	9	4

1665: 3 12 7 19 6 12 8 5

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1673:	8	7	4	3	8	6	6	7
1681:	7	5	5	9	9	4	5	4
1689:	7	7	10	7	5	3	4	8
1697:	6	12	8	8	10	4	4	7
1705:	5	8	6	7	5	6	9	3
1713:	3	6	4	10	2	5	7	5
1721:	4	4	5	3	13	7	1	7
1729:	4	10	7	3	5	7	10	4
1737:	7	9	5	8	3	9	0	8
1745:	4	6	5	6	9	9	5	5
1753:	5	6	6	5	4	2	3	8
1761:	5	9	8	4	11	9	6	6
1769:	5	4	8	8	7	4	7	8
1777:	1	8	8	4	5	5	6	5
1785:	6	5	4	8	4	8	4	5
1793:	4	8	6	5	9	6	4	5
1801:	8	4	5	4	8	8	7	8
1809:	8	6	7	6	11	9	7	1
1817:	8	6	5	8	2	3	2	5
1825:	7	9	3	7	3	9	8	9
1833:	4	5	10	26	25	16	6	5
1841:	8	2	8	7	13	4	7	6
1849:	1	5	4	12	3	8	6	6
1857:	4	3	6	2	6	6	2	0
1865:	6	7	8	4	2	3	4	2
1873:	4	9	9	2	5	4	2	4
1881:	12	3	4	7	11	4	5	4
1889:	7	5	5	4	5	6	2	3
1897:	7	2	7	5	3	7	6	6
1905:	3	4	5	3	5	3	7	3
1913:	7	3	2	5	4	3	4	4
1921:	2	3	4	6	7	5	3	2
1929:	4	5	6	3	5	5	7	2
1937:	7	5	4	4	2	5	5	4
1945:	2	5	5	7	5	2	2	5
1953:	6	4	5	5	6	2	5	7
1961:	5	4	4	4	4	5	7	7
1969:	1	1	9	2	5	5	3	2
1977:	2	13	7	6	8	6	8	7
1985:	12	10	2	4	3	5	7	8
1993:	4	3	2	3	4	3	2	7
2001:	3	4	6	3	3	4	5	1
2009:	0	3	8	3	5	5	3	3
2017:	3	3	8	5	2	5	4	7
2025:	3	4	6	6	8	8	7	7
2033:	3	3	3	8	8	2	3	6
2041:	2	4	10	3	4	6	6	6
2049:	4	2	4	8	3	3	3	5
2057:	6	11	1	4	4	4	5	7
2065:	6	4	5	5	4	3	1	3
2073:	4	6	10	3	5	3	7	7
2081:	5	5	2	9	3	7	2	2
2089:	5	4	4	5	4	3	2	2

2097: 2 4 3 4 9 6 4 7

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2105:	3	0	4	2	4	7	8	0
2113:	3	6	3	4	3	5	2	3
2121:	6	1	4	5	3	4	7	3
2129:	3	3	3	7	0	6	8	1
2137:	2	5	0	2	2	2	5	3
2145:	1	5	3	4	5	3	3	8
2153:	5	4	4	1	6	6	3	3
2161:	5	0	4	3	4	2	4	2
2169:	3	4	3	4	3	5	5	2
2177:	5	3	4	7	8	2	1	4
2185:	2	5	4	2	7	11	9	3
2193:	3	6	4	4	5	5	3	3
2201:	6	4	6	1	7	6	0	8
2209:	1	5	4	4	3	5	5	3
2217:	6	5	0	6	7	8	4	2
2225:	2	4	7	3	7	2	4	3
2233:	4	6	5	3	5	3	4	7
2241:	1	3	2	2	5	3	5	7
2249:	3	8	5	3	6	3	5	3
2257:	2	6	4	6	8	5	5	5
2265:	7	3	4	4	4	4	7	9
2273:	4	2	3	5	6	6	4	2
2281:	7	5	8	3	6	4	4	2
2289:	3	4	6	1	4	9	4	1
2297:	3	2	4	4	4	0	3	6
2305:	6	0	3	1	1	1	4	2
2313:	1	4	2	2	3	1	2	4
2321:	1	3	1	1	0	2	2	1
2329:	6	0	2	5	1	1	1	1
2337:	2	4	2	1	0	3	2	7
2345:	4	1	0	3	3	3	3	3
2353:	1	2	2	1	1	1	3	1
2361:	0	5	4	0	0	1	1	5
2369:	1	2	1	0	0	3	0	0
2377:	1	0	1	1	2	3	1	1
2385:	0	2	3	0	0	2	1	1
2393:	0	0	2	1	0	1	1	2
2401:	1	2	0	1	2	2	2	0
2409:	0	1	0	0	3	0	2	0
2417:	0	5	1	1	1	1	1	2
2425:	1	1	1	3	2	2	0	1
2433:	1	0	1	1	1	0	0	0
2441:	0	1	2	0	1	2	1	1
2449:	3	0	0	1	0	0	1	1
2457:	0	1	2	2	0	0	1	0
2465:	0	1	0	2	1	2	0	2
2473:	0	1	0	0	0	0	1	1
2481:	0	0	2	0	0	1	1	0
2489:	2	2	1	0	2	2	0	0
2497:	1	2	0	1	0	0	2	12
2505:	46	93	62	22	1	0	0	0
2513:	1	0	1	0	0	0	0	0
2521:	0	0	1	0	1	0	0	0

2529: 0 0 0 1 0 0 1 1

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2537:	0	0	0	0	0	0	0	0
2545:	0	0	0	0	0	0	1	1
2553:	0	0	0	1	0	0	0	0
2561:	1	0	1	0	0	0	0	1
2569:	0	0	0	0	1	0	0	0
2577:	0	0	1	0	0	0	0	0
2585:	0	0	1	0	0	0	0	0
2593:	0	0	1	0	0	0	0	0
2601:	0	0	0	0	0	0	0	0
2609:	0	0	0	3	1	5	4	3
2617:	1	2	0	0	0	1	0	0
2625:	0	0	0	0	1	1	0	0
2633:	0	0	1	0	1	0	0	0
2641:	0	0	0	0	0	0	0	0
2649:	0	0	0	0	0	0	1	0
2657:	1	1	0	0	0	1	0	0
2665:	0	0	0	0	0	0	0	0
2673:	0	0	1	0	2	0	0	0
2681:	0	0	0	1	0	0	0	1
2689:	0	0	0	0	0	0	2	0
2697:	0	0	0	0	0	0	0	0
2705:	0	0	0	0	0	0	0	0
2713:	0	0	0	3	0	1	0	0
2721:	0	0	0	1	1	0	0	0
2729:	0	0	0	0	0	0	0	1
2737:	0	1	0	1	0	0	0	0
2745:	0	1	0	0	0	0	0	1
2753:	0	0	0	0	0	0	0	0
2761:	0	0	0	0	0	0	0	0
2769:	0	0	0	0	0	0	0	1
2777:	0	0	0	0	1	0	0	0
2785:	0	0	0	0	0	0	0	0
2793:	0	2	0	0	0	1	0	0
2801:	0	1	0	1	0	1	0	0
2809:	0	0	0	0	0	0	1	0
2817:	0	0	0	0	1	0	0	0
2825:	0	0	0	2	0	0	0	0
2833:	0	0	0	0	0	0	0	0
2841:	0	0	0	1	0	0	0	0
2849:	0	0	0	0	0	0	0	0
2857:	0	0	0	0	1	0	0	0
2865:	0	0	0	1	0	2	0	1
2873:	0	0	0	0	0	0	0	0
2881:	0	0	0	0	1	0	0	0
2889:	0	0	0	1	0	0	0	0
2897:	0	0	0	0	0	0	0	0
2905:	0	0	0	0	0	0	1	0
2913:	0	0	0	0	0	0	0	0
2921:	0	0	0	0	0	0	0	0
2929:	0	1	0	0	0	0	0	0
2937:	0	0	0	0	0	0	0	0
2945:	0	0	0	0	0	0	0	0
2953:	0	0	0	1	0	1	0	0

2961: 0 0 1 1 0 1 0 0

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2969:	0	0	1	0	0	0	0	0
2977:	0	0	1	0	0	0	0	0
2985:	0	0	0	0	0	0	0	0
2993:	0	0	0	0	0	0	0	0
3001:	0	0	0	0	0	0	0	0
3009:	0	0	0	0	0	0	0	0
3017:	0	2	0	0	0	0	0	1
3025:	0	0	0	0	0	0	0	0
3033:	0	0	0	0	0	0	0	0
3041:	0	0	0	0	0	0	1	0
3049:	0	0	0	0	0	0	0	0
3057:	0	0	1	0	0	1	0	0
3065:	0	0	0	0	0	0	0	0
3073:	0	0	0	0	0	0	0	0
3081:	0	0	0	0	0	0	0	1
3089:	0	0	0	0	0	1	0	0
3097:	0	0	0	0	0	0	0	0
3105:	0	0	0	0	0	1	0	0
3113:	0	0	0	1	0	0	0	0
3121:	0	0	0	0	0	0	0	0
3129:	0	0	0	0	0	0	0	0
3137:	1	0	0	0	0	0	1	0
3145:	0	0	0	0	0	0	0	2
3153:	0	0	1	0	0	0	0	0
3161:	0	0	0	0	0	0	0	0
3169:	0	0	0	0	0	0	1	0
3177:	0	0	0	0	0	0	0	0
3185:	0	0	0	0	0	0	0	0
3193:	0	0	0	0	0	0	0	0
3201:	0	0	0	0	0	0	0	0
3209:	0	0	0	0	0	0	0	0
3217:	0	0	0	0	0	0	0	0
3225:	0	0	0	0	0	0	0	0
3233:	0	0	0	1	0	0	0	0
3241:	0	0	0	0	0	0	0	0
3249:	0	0	0	0	0	0	0	0
3257:	0	0	0	0	0	0	0	0
3265:	0	0	0	0	0	0	0	0
3273:	0	0	0	0	0	0	0	0
3281:	0	0	0	0	0	0	0	0
3289:	0	0	0	0	1	0	0	0
3297:	0	0	0	0	0	0	0	0
3305:	0	0	0	0	0	0	0	0
3313:	0	0	1	0	0	0	0	0
3321:	0	0	0	0	0	0	0	0
3329:	0	0	0	0	0	0	1	0
3337:	0	0	0	0	0	0	0	0
3345:	0	0	1	0	0	0	1	0
3353:	0	0	0	0	0	0	0	0
3361:	0	0	0	0	0	0	1	0
3369:	0	1	0	0	0	0	0	0
3377:	0	0	0	0	0	0	0	0
3385:	0	0	0	0	0	0	0	0

3393: 0 0 0 0 0 0 0 0

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
3401:	0	0	0	0	0	0	1	0
3409:	0	0	0	1	0	0	0	0
3417:	0	0	0	0	0	0	1	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	0
3449:	0	0	0	0	1	0	0	0
3457:	0	0	0	0	1	0	0	1
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	1	0	0	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	0	0	0	0	1	0	0
3505:	0	0	1	0	0	0	0	0
3513:	0	0	0	0	1	0	0	0
3521:	0	0	0	0	0	0	0	1
3529:	0	0	0	0	0	0	0	0
3537:	0	0	0	0	0	0	2	0
3545:	0	0	0	0	0	0	0	0
3553:	0	0	0	0	1	0	0	0
3561:	0	0	0	0	1	0	0	0
3569:	0	0	0	0	0	0	0	0
3577:	0	0	0	0	0	0	0	0
3585:	0	0	1	0	0	1	1	0
3593:	0	0	1	0	0	0	0	0
3601:	0	0	0	1	0	0	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	0	0	0	0	0	0	0
3625:	1	0	0	0	0	0	1	0
3633:	0	0	0	1	0	0	0	0
3641:	0	0	0	0	0	0	0	0
3649:	0	0	0	0	0	0	0	0
3657:	1	0	0	0	0	0	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	0	0	1	0	0
3681:	0	0	0	0	0	0	0	0
3689:	0	0	0	0	1	0	0	0
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	0	0	0	0	0
3713:	0	1	0	0	0	0	0	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	0	0	0	0
3745:	0	1	0	0	0	0	0	0
3753:	0	0	0	1	0	0	0	0
3761:	0	0	0	1	0	0	2	0
3769:	0	0	0	0	0	0	0	0
3777:	0	0	1	1	0	0	1	0
3785:	0	0	0	0	0	0	0	0
3793:	0	0	0	0	0	0	0	0
3801:	0	0	0	0	1	0	0	0
3809:	0	0	0	0	0	0	0	0
3817:	0	0	0	0	0	0	0	0

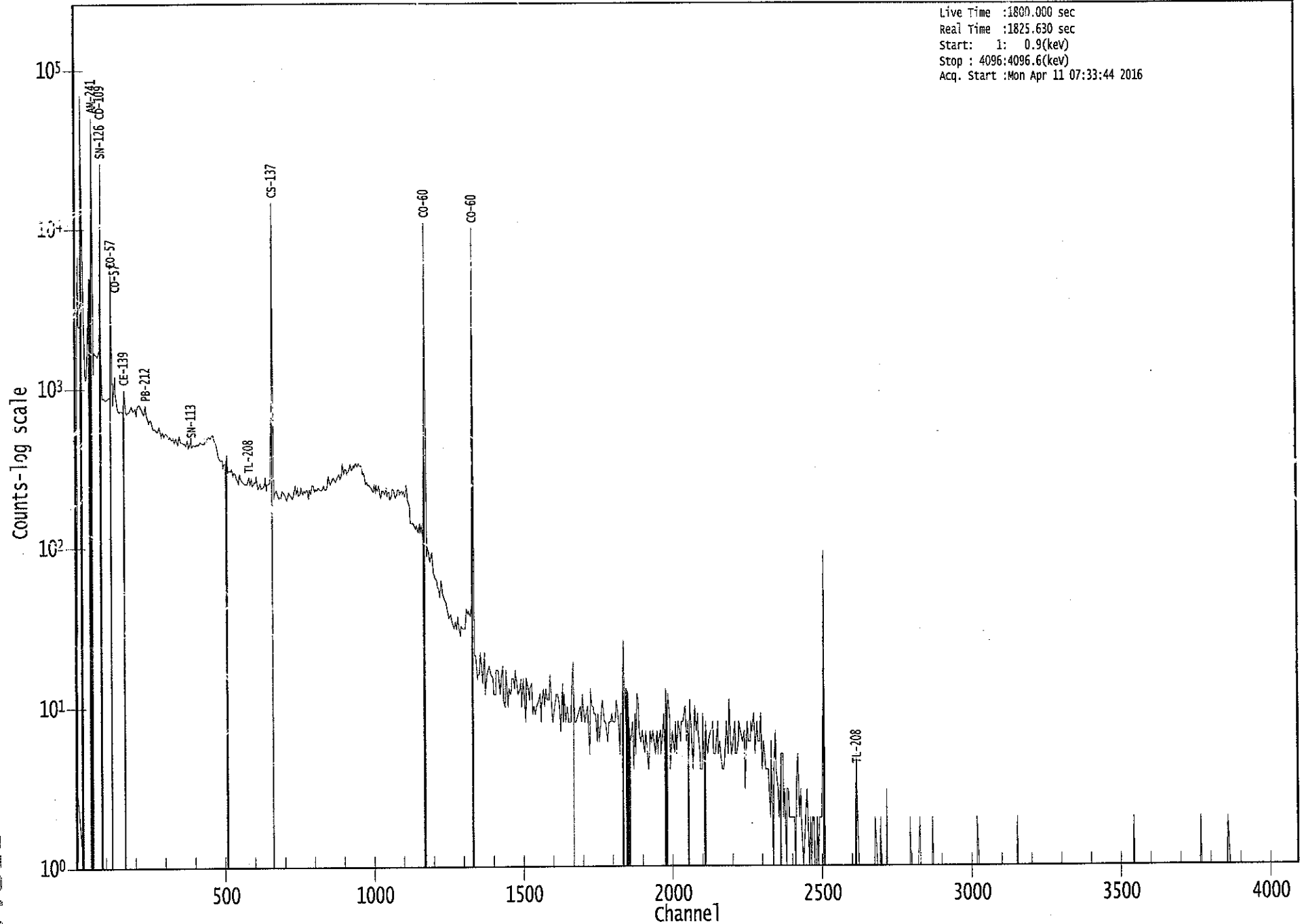
3825: 0 0 0 0 0 0 0 0

Sample Title: GAS-1302

Channel	-----	-----	-----	-----	-----	-----	-----	-----
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	0	1	0	0
3857:	2	0	1	0	0	0	0	1
3865:	0	0	1	0	0	0	0	0
3873:	0	0	1	0	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	0	0	0	0
3897:	0	0	0	0	1	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	0	0	0	0	0	0	0	0
3921:	0	0	1	0	0	0	0	0
3929:	0	0	1	0	0	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	0	0	0	0
3953:	0	1	0	0	0	0	0	1
3961:	0	0	0	0	0	0	0	0
3969:	0	0	0	0	0	0	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	0	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	0	0	0	0
4033:	0	0	0	0	0	0	0	0
4041:	0	0	1	0	0	0	0	0
4049:	0	0	0	0	0	0	0	1
4057:	0	0	0	1	0	0	0	0
4065:	0	0	0	0	0	0	0	0
4073:	0	1	0	0	0	0	0	0
4081:	0	0	0	0	0	0	1	0
4089:	1	0	0	0	0	0	0	0

0000035517.CNF

Live Time :1800.000 sec
 Real Time :1825.630 sec
 Start: 1: 0.9(keV)
 Stop : 4096:4096.6(keV)
 Acq. Start :Mon Apr 11 07:33:44 2016



ROI Type: 1

ROI Type: 2

0000035517

KBS
4/13/16

Analysis Report for 1603102-02
BLANK

GAMMA SPECTRUM ANALYSIS

Sample Identification : 1603102-02
Sample Description : BLANK
Sample Type : SOIL

Sample Size : 7.834E+02 grams
Facility : Countroom

Sample Taken On : 4/13/2016 7:11:17AM
Acquisition Started : 4/13/2016 1:15:30PM

Procedure : GAS-1402 pCi
Operator : Administrator
Detector Name : GE3
Geometry : GAS-1402
Live Time : 3600.0 seconds
Real Time : 3611.9 seconds

Dead Time : 0.33 %

Peak Locate Threshold : 2.50
Peak Locate Range (in channels) : 1 - 4096
Peak Area Range (in channels) : 9 - 4096
Identification Energy Tolerance : 1.000 keV

Energy Calibration Used Done On : 10/25/2014
Efficiency Calibration Used Done On : 10/25/2014
Efficiency Calibration Description :

Sample Number : 35733

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
4/13/16

Analysis Report for 1603102-02

BLANK

PEAK LOCATE REPORT

Peak Locate Performed on : 4/13/2016 2:15:43PM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	77.05	77.26	0.0000	0.00
2	142.85	143.03	0.0000	0.00
3	367.53	367.59	0.0000	0.00
4	530.01	530.00	0.0000	0.00
5	591.66	591.61	0.0000	0.00
6	848.30	848.14	0.0000	0.00
7	941.80	941.59	0.0000	0.00
8	968.83	968.61	0.0000	0.00
9	984.95	984.72	0.0000	0.00
10	1069.94	1069.67	0.0000	0.00
11	1173.16	1172.86	0.0000	0.00
12	1193.39	1193.08	0.0000	0.00
13	1439.16	1438.75	0.0000	0.00
14	1764.96	1764.43	0.0000	0.00

? = Adjacent peak noted

Errors quoted at 2.000sigma

Analysis Report for 1603102-02

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PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/13/2016 2:15:43PM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
1	77.05	74 -	81	77.26	3.73E+01	37.68	2.11E+02	2.88
2	142.85	139 -	146	143.03	3.70E+01	28.43	1.06E+02	2.19
3	367.53	363 -	373	367.59	2.99E+01	19.22	3.43E+01	8.46
4	530.01	527 -	533	530.00	1.08E+01	11.00	1.44E+01	3.73
5	591.66	588 -	595	591.61	1.10E+01	13.71	2.40E+01	3.53
6	848.30	844 -	851	848.14	1.00E+01	9.38	8.00E+00	1.24
7	941.80	939 -	944	941.59	8.31E+00	8.89	9.38E+00	3.77
8	968.83	964 -	972	968.61	1.05E+01	10.02	9.00E+00	1.60
9	984.95	980 -	988	984.72	8.69E+00	9.62	8.62E+00	3.65
10	1069.94	1067 -	1071	1069.67	6.78E+00	6.96	4.44E+00	1.20
11	1173.16	1169 -	1175	1172.86	1.61E+01	9.18	3.72E+00	2.84
12	1193.39	1190 -	1196	1193.08	7.56E+00	6.95	2.89E+00	2.68
13	1439.16	1435 -	1441	1438.75	4.42E+00	6.02	3.17E+00	2.56
14	1764.96	1761 -	1767	1764.43	7.00E+00	5.29	0.00E+00	1.98

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/13/2016 2:15:43PM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
1	77.05	74 -	81	3.73E+01	37.68	2.11E+02	2.93E+01

Analysis Report for 1603102-02

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Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
2	142.85	139 -	146	3.70E+01	28.43	1.06E+02	2.11E+01
3	367.53	363 -	373	2.99E+01	19.22	3.43E+01	1.30E+01
4	530.01	527 -	533	1.08E+01	11.00	1.44E+01	7.25E+00
5	591.66	588 -	595	1.10E+01	13.71	2.40E+01	9.86E+00
6	848.30	844 -	851	1.00E+01	9.38	8.00E+00	5.70E+00
7	941.80	939 -	944	8.31E+00	8.89	9.38E+00	5.56E+00
8	968.83	964 -	972	1.05E+01	10.02	9.00E+00	6.29E+00
9	984.95	980 -	988	8.69E+00	9.62	8.62E+00	6.25E+00
10	1069.94	1067 -	1071	6.78E+00	6.96	4.44E+00	3.80E+00
11	1173.16	1169 -	1175	1.61E+01	9.18	3.72E+00	3.65E+00
12	1193.39	1190 -	1196	7.56E+00	6.95	2.89E+00	3.49E+00
13	1439.16	1435 -	1441	4.42E+00	6.02	3.17E+00	3.54E+00
14	1764.96	1761 -	1767	7.00E+00	5.29	0.00E+00	0.00E+00

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

PEAK WITH NID REPORT

Peak Analysis Performed on : 4/13/2016 2:15:43PM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Peak Match Tolerance : 1.000 keV

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
1	77.05	74 -	81	77.26	3.73E+01	37.68	2.11E+02	.....
2	142.85	139 -	146	143.03	3.70E+01	28.43	1.06E+02	U-235
3	367.53	363 -	373	367.59	2.99E+01	19.22	3.43E+01	.....
4	530.01	527 -	533	530.00	1.08E+01	11.00	1.44E+01	I-133 RB-83
5	591.66	588 -	595	591.61	1.10E+01	13.71	2.40E+01	.....
6	848.30	844 -	851	848.14	1.00E+01	9.38	8.00E+00	.....
7	941.80	939 -	944	941.59	8.31E+00	8.89	9.38E+00	.....
8	968.83	964 -	972	968.61	1.05E+01	10.02	9.00E+00	AC-228
9	984.95	980 -	988	984.72	8.69E+00	9.62	8.62E+00	.....
10	1069.94	1067 -	1071	1069.67	6.78E+00	6.96	4.44E+00	.....
11	1173.16	1169 -	1175	1172.86	1.61E+01	9.18	3.72E+00	CO-60

Analysis Report for 1603102-02

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Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
12	1193.39	1190 -	1196	1193.08	7.56E+00	6.95	2.89E+00	.....
13	1439.16	1435 -	1441	1438.75	4.42E+00	6.02	3.17E+00	.....
14	1764.96	1761 -	1767	1764.43	7.00E+00	5.29	0.00E+00	BI-214

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 4/13/2016 2:15:43PM

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
1	77.05	3.73E+01	37.68	2.39E-02	2.16E-03
2	142.85	3.70E+01	28.43	2.15E-02	1.63E-03
3	367.53	2.99E+01	19.22	1.07E-02	8.72E-04
4	530.01	1.08E+01	11.00	7.76E-03	6.99E-04
5	591.66	1.10E+01	13.71	7.05E-03	6.38E-04
6	848.30	1.00E+01	9.38	5.16E-03	4.15E-04
7	941.80	3.31E+00	8.89	4.72E-03	3.67E-04
8	968.83	1.05E+01	10.02	4.61E-03	3.61E-04
9	984.95	8.69E+00	9.62	4.54E-03	3.58E-04
10	1069.94	6.78E+00	6.96	4.24E-03	3.43E-04
11	1173.16	1.61E+01	9.18	3.92E-03	3.23E-04
12	1193.39	7.56E+00	6.95	3.87E-03	3.19E-04
13	1439.16	4.42E+00	6.02	3.33E-03	2.73E-04
14	1764.96	7.00E+00	5.29	2.86E-03	2.24E-04

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000 sigma

Analysis Report for 1603102-02

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BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/13/2016 2:15:43PM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000035178.CNF

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
1	77.05	3.73E+01	37.68			3.73E+01	3.77E+01
2	142.85	3.70E+01	28.43			3.70E+01	2.84E+01
3	367.53	2.99E+01	19.22			2.99E+01	1.92E+01
4	530.01	1.08E+01	11.00			1.08E+01	1.10E+01
5	591.66	1.10E+01	13.71			1.10E+01	1.37E+01
6	848.30	1.00E+01	9.38			1.00E+01	9.38E+00
7	941.80	8.31E+00	8.89			8.31E+00	8.89E+00
8	968.83	1.05E+01	10.02			1.05E+01	1.00E+01
9	984.95	8.69E+00	9.62			8.69E+00	9.62E+00
10	1069.94	6.78E+00	6.96			6.78E+00	6.96E+00
11	1173.16	1.61E+01	9.18			1.61E+01	9.18E+00
12	1193.39	7.56E+00	6.95			7.56E+00	6.95E+00
13	1439.16	4.42E+00	6.02			4.42E+00	6.02E+00
14	1764.96	7.00E+00	5.29			7.00E+00	5.29E+00

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

AREA CORRECTION REPORT REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 4/13/2016 2:15:43PM

Ref. Peak Energy : 0.00

Reference Date :

Peak Ratio : 0.00

Uncertainty : 0.00

Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000035178.CNF

Corrected Area is: Original * Peak Ratio - Background

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
1	77.05	3.73E+01	37.63			3.73E+01	3.77E+01
2	142.85	3.70E+01	28.43			3.70E+01	2.84E+01
3	367.53	2.99E+01	19.22			2.99E+01	1.92E+01
4	530.01	1.08E+01	11.00			1.08E+01	1.10E+01

Analysis Report for 1603102-02

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Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
5	591.66	1.10E+01	13.71			1.10E+01	1.37E+01
6	848.30	1.00E+01	9.38			1.00E+01	9.38E+00
7	941.80	8.31E+00	8.89			8.31E+00	8.89E+00
8	968.83	1.05E+01	10.02			1.05E+01	1.00E+01
9	984.95	8.69E+00	9.62			8.69E+00	9.62E+00
10	1069.94	6.78E+00	6.96			6.78E+00	6.96E+00
11	1173.16	1.61E+01	9.18			1.61E+01	9.18E+00
12	1193.39	7.56E+00	6.95			7.56E+00	6.95E+00
13	1439.16	4.42E+00	6.02			4.42E+00	6.02E+00
14	1764.96	7.00E+00	5.29			7.00E+00	5.29E+00

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
I-133	0.996	529.87 *	86.30	1.92E-02	1.97E-02

* = Energy line found in the spectrum.

- = Manually added nuclide.

? = Manually edited nuclide.

Energy Tolerance : 1.000 keV

Nuclide confidence index threshold = 0.30

Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/13/2016 2:15:43PM

Peak Locate From Channel : 1

Peak Locate To Channel : 4096

: 00216

Analysis Report for 1603102-02

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Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
1	77.05	1.03584E-02	50.53		
2	142.85	1.02778E-02	38.41	Tol.	U-235
3	367.53	8.29196E-03	32.20		
5	591.66	3.05556E-03	62.32		
6	848.30	2.77778E-03	46.90		
7	941.80	2.30769E-03	53.49		
8	968.83	2.91667E-03	47.74	Tol.	AC-228
9	984.95	2.41453E-03	55.32		
10	1069.94	1.88272E-03	51.38		
11	1173.16	4.48302E-03	28.44	Tol.	CO-60
12	1193.39	2.09877E-03	45.97		
13	1439.16	1.22685E-03	68.16		
14	1764.96	1.94444E-03	37.80	Tol.	BI-214

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
I-133	0.99	529.87 *	86.30	1.92E-02	1.97E-02

* = Energy line found in the spectrum.

- = Manually added nuclide.

? = Manually edited nuclide.

@ = Energy line not used for Weighted Mean Activity

Energy Tolerance : 1.000 keV

Nuclide confidence index threshold = 0.30

Errors quoted at 2.000sigma

Analysis Report for 1603102-02

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INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
I-133	0.996	1.92E-02	1.97E-02	

- ? = nuclide is part of an undetermined solution
X = nuclide rejected by the interference analysis
@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 1603102-02

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UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/13/2016 2:15:43PM
 Peak Locate From Channel : 1
 Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
1	77.05	1.03584E-02	50.53		
2	142.85	1.02778E-02	38.41	Tol.	U-235
3	367.53	8.29196E-03	32.20		
5	591.66	3.05556E-03	62.32		
6	848.30	2.77778E-03	46.90		
7	941.80	2.30769E-03	53.49		
8	968.83	2.91667E-03	47.74	Tol.	AC-228
9	984.95	2.41453E-03	55.32		
10	1069.94	1.88272E-03	51.38		
11	1173.16	4.48302E-03	28.44	Tol.	CO-60
12	1193.39	2.09877E-03	45.97		
13	1439.16	1.22685E-03	68.16		
14	1764.96	1.94444E-03	37.80	Tol.	BI-214

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet
 Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	10.42	-7.20E-02	2.55E-01	2.55E-01
+	NA-22	1274.54	99.94	-3.49E-03	3.69E-02	3.69E-02
+	NA-24	1368.53	99.99	2.25E-02	5.28E-02	5.28E-02
		2754.09	99.86	3.97E-03		3.53E-02

Analysis Report for 1603102-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	AL-26	1808.65	99.76	-1.37E-02	3.18E-02	3.18E-02
+	K-40	1460.81	10.67	-3.82E-01	3.28E-01	3.28E-01
+	AR-41	1293.64	99.16	1.23E-01	4.52E-01	4.52E-01
+	TI-44	67.88	94.40	-1.39E-02	1.90E-02	1.90E-02
		78.34	96.00	5.16E-03		1.93E-02
+	SC-46	889.25	99.98	2.00E-02	2.83E-02	3.65E-02
		1120.51	99.99	1.18E-03		2.83E-02
+	V-48	983.52	99.98	8.53E-03	3.33E-02	3.87E-02
		1312.10	97.50	-1.39E-03		3.33E-02
+	CR-51	320.08	9.83	5.08E-02	2.51E-01	2.51E-01
+	MN-54	834.83	99.97	-4.59E-03	3.19E-02	3.19E-02
+	CO-56	846.75	99.96	1.58E-02	3.74E-02	3.74E-02
		1037.75	14.03	4.30E-03		2.86E-01
		1238.25	67.00	9.55E-03		5.01E-02
		1771.40	15.51	-1.38E-01		1.60E-01
		2598.48	16.90	8.43E-03		1.86E-01
+	CO-57	122.06	85.51	1.10E-02	2.08E-02	2.08E-02
		136.48	10.60	1.51E-02		1.55E-01
+	CO-58	810.76	99.40	3.22E-03	2.71E-02	2.71E-02
+	FE-59	1099.22	56.50	8.23E-04	5.39E-02	5.39E-02
		1291.56	43.20	3.07E-03		7.37E-02
+	CO-60	1173.22	100.00	4.06E-02	5.48E-02	5.48E-02
		1332.49	100.00	2.84E-02		5.61E-02
+	ZN-65	1115.52	50.75	-8.31E-03	6.06E-02	6.06E-02
+	GA-67	93.31	35.70	1.14E-01	7.00E-02	7.00E-02
		208.95	2.24	-7.65E-01		9.23E-01
		300.22	16.00	-3.06E-02		1.61E-01
+	SE-75	121.11	16.70	3.31E-02	2.81E-02	1.04E-01
		136.00	59.20	5.74E-03		2.81E-02
		264.65	59.80	1.03E-02		3.84E-02
		279.53	25.20	2.70E-02		8.81E-02
		400.65	11.40	8.98E-03		2.29E-01
+	RB-82	776.52	13.00	-3.94E-02	2.42E-01	2.42E-01
+	RB-83	520.41	46.00	-1.72E-02	5.94E-02	5.94E-02
		529.64	30.30	2.95E-03		9.16E-02
		552.65	16.40	-5.09E-02		1.52E-01
+	KR-85	513.99	0.43	9.49E+00	1.07E+01	1.07E+01
+	SR-85	513.99	99.27	4.16E-02	4.71E-02	4.71E-02
+	Y-88	898.02	93.40	1.03E-02	3.64E-02	3.64E-02
		1836.01	99.38	2.32E-04		4.56E-02
+	NB-93M	16.57	9.43	2.31E+01	3.61E+01	3.61E+01
+	NB-94	702.63	100.00	-6.32E-03	3.45E-02	3.46E-02
		871.10	100.00	-1.90E-02		3.45E-02
+	NB-95	765.79	99.81	5.94E-03	3.65E-02	3.65E-02
+	NB-95M	235.69	25.00	4.05E-02	1.06E-01	1.06E-01
+	ZR-95	724.18	43.70	1.01E-03	5.09E-02	6.75E-02
		756.72	55.30	-1.56E-02		5.09E-02

Analysis Report for 1603102-02

BLANK

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	MO-99	181.06	6.20	-1.68E-02	1.95E-01	2.95E-01
		739.58	12.80	-6.91E-02		1.95E-01
		778.00	4.50	2.89E-01		7.73E-01
+	RU-103	497.05	89.00	-3.30E-03	3.23E-02	3.23E-02
+	RU-106	621.84	9.80	-1.59E-01	2.52E-01	2.52E-01
+	AG-108M	433.93	89.80	-4.51E-03	2.53E-02	2.53E-02
		614.37	90.40	-1.06E-02		3.65E-02
		722.95	90.50	-8.64E-03		2.98E-02
+	CD-109	88.03	3.72	-1.77E-01	4.40E-01	4.40E-01
+	AG-110M	657.75	93.14	-1.90E-02	2.67E-02	2.67E-02
		677.61	10.53	-1.32E-02		2.64E-01
		706.67	16.46	-4.92E-02		2.00E-01
		763.93	21.98	3.04E-02		1.55E-01
		884.67	71.63	-3.09E-03		4.69E-02
		1384.27	23.94	-8.75E-03		1.08E-01
+	CD-113M	263.70	0.02	3.70E+01	9.95E+01	9.95E+01
+	SN-113	255.12	1.93	6.23E-02	3.74E-02	1.19E+00
		391.69	64.90	-1.47E-03		3.74E-02
+	TE123M	159.00	84.10	-7.83E-03	1.79E-02	1.79E-02
+	SB-124	602.71	97.87	8.78E-03	3.68E-02	3.68E-02
		645.85	7.26	-4.65E-02		4.44E-01
		722.78	11.10	-7.07E-02		2.44E-01
		1691.02	49.00	1.33E-02		6.18E-02
+	I-125	35.49	6.49	-2.70E-01	7.30E-01	7.30E-01
+	SB-125	176.33	6.89	-3.39E-02	8.40E-02	2.44E-01
		427.89	29.33	1.42E-02		8.40E-02
		463.38	10.35	1.43E-01		3.17E-01
		600.56	17.86	-1.89E-02		1.97E-01
		635.90	11.32	-5.97E-02		3.07E-01
+	SB-126	414.70	83.30	1.67E-02	3.28E-02	3.32E-02
		666.33	99.60	-2.25E-02		3.28E-02
		695.00	99.60	-1.01E-02		3.49E-02
		720.50	53.80	-1.52E-03		5.31E-02
+	SN-126	87.57	37.00	-1.78E-02	4.42E-02	4.42E-02
+	SB-127	473.00	25.00	3.13E-03	9.14E-02	1.13E-01
		685.20	35.70	-1.72E-02		9.14E-02
		783.80	14.70	4.77E-03		2.42E-01
+	I-129	29.78	57.00	-2.26E-02	1.77E-01	1.77E-01
		33.60	13.20	1.03E-02		4.31E-01
		39.58	7.52	-9.04E-02		4.49E-01
+	I-131	284.30	6.05	-5.38E-02	3.27E-02	3.75E-01
		364.48	81.20	1.24E-02		3.27E-02
		636.97	7.26	6.58E-02		5.12E-01
		722.29	1.80	-4.45E-01		1.53E+00
+	TE-132	49.72	13.10	-2.31E-01	2.79E-02	1.89E-01
		228.16	88.00	1.01E-02		2.79E-02
+	BA-133	81.00	33.00	-8.54E-03	4.90E-02	5.04E-02
		302.84	17.80	6.43E-03		1.48E-01
		356.01	60.00	1.99E-02		4.90E-02

Analysis Report for 1603102-02

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	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	I-133	529.87	*	86.30	1.92E-02	3.07E-02	3.07E-02
+	XE-133	81.00		38.00	-7.69E-03	4.54E-02	4.54E-02
+	CS-134	563.23		8.38	-3.89E-02	3.55E-02	3.65E-01
		569.32		15.43	-8.27E-02		1.60E-01
		604.70		97.60	-9.38E-03		3.55E-02
		795.84		85.40	-8.58E-05		3.88E-02
		801.93		8.73	6.85E-02		3.22E-01
+	CS-135	268.24		16.00	1.59E-02	1.45E-01	1.45E-01
+	I-135	1131.51		22.50	5.94E-02	3.14E-01	3.50E-01
		1260.41		28.60	1.17E-01		3.14E-01
		1678.03		9.54	-3.37E-02		6.27E-01
+	CS-136	153.22		7.46	6.91E-02	2.20E-02	2.42E-01
		163.89		4.61	-8.24E-03		3.75E-01
		176.55		13.56	-6.65E-03		1.26E-01
		273.65		12.66	-2.60E-02		1.79E-01
		340.57		48.50	-1.32E-02		5.53E-02
		818.50		99.70	-9.17E-04		2.20E-02
		1048.07		79.60	2.55E-03		4.94E-02
		1235.34		19.70	9.18E-03		1.72E-01
+	CS-137	661.65		85.12	1.79E-02	4.05E-02	4.05E-02
+	LA-138	788.74		34.00	2.13E-02	6.14E-02	1.09E-01
		1435.80		66.00	8.70E-03		6.14E-02
+	CE-139	165.85		90.35	-6.56E-04	2.12E-02	2.12E-02
+	BA-140	162.64		6.70	3.59E-02	1.08E-01	2.54E-01
		304.84		4.50	2.76E-01		6.05E-01
		423.70		3.20	-6.68E-02		8.81E-01
		437.55		2.00	3.00E-01		1.38E+00
		537.32		25.00	3.01E-02		1.08E-01
+	LA-140	328.77		20.50	7.94E-03	4.34E-02	1.29E-01
		487.03		45.50	-2.91E-03		7.10E-02
		815.85		23.50	1.36E-02		1.09E-01
		1596.49		95.49	7.62E-03		4.34E-02
+	CE-141	145.44		48.40	-5.76E-03	3.21E-02	3.21E-02
+	CE-143	57.36		11.80	-2.08E-02	6.45E-02	1.96E-01
		293.26		42.00	1.55E-02		6.45E-02
		664.55		5.20	2.04E-01		7.98E-01
+	CE-144	133.54		10.80	4.22E-02	1.54E-01	1.54E-01
+	PM-144	476.78		42.00	-2.44E-02	3.14E-02	6.02E-02
		618.01		98.60	-4.42E-03		3.14E-02
		696.49		99.49	-2.97E-03		3.45E-02
+	PM-145	36.85		21.70	7.61E-02	1.04E-01	1.99E-01
		37.36		39.70	5.85E-02		1.04E-01
		42.30		15.10	-4.64E-02		1.90E-01
		72.40		2.31	-1.78E-01		7.65E-01
+	PM-146	453.90		39.94	1.21E-02	6.49E-02	6.49E-02
		735.90		14.01	3.39E-02		2.13E-01
		747.13		13.10	2.54E-02		2.31E-01
+	ND-147	91.11		28.90	3.91E-02	7.67E-02	7.67E-02
		531.02		13.10	7.49E-02		2.26E-01

Analysis Report for 1603102-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PM-149	285.90	3.10	-5.41E-02	8.13E-01	8.13E-01
+	EU-152	121.78	20.50	4.56E-02	8.66E-02	8.66E-02
		244.69	5.40	-7.10E-02		4.39E-01
		344.27	19.13	-5.90E-02		1.29E-01
		778.89	9.20	1.78E-01		3.53E-01
		964.01	10.40	3.98E-02		2.81E-01
		1085.78	7.22	4.76E-02		3.81E-01
		1112.02	9.60	0.00E+00		3.65E-01
		1407.95	14.94	2.84E-02		2.67E-01
+	GD-153	97.43	31.30	-5.16E-02	4.52E-02	4.52E-02
		103.18	22.20	8.77E-03		6.48E-02
+	EU-154	123.07	40.50	1.75E-02	4.20E-02	4.20E-02
		723.30	19.70	-3.97E-02		1.37E-01
		873.19	11.50	7.45E-02		3.53E-01
		996.32	10.30	-2.28E-01		2.48E-01
		1004.76	17.90	0.00E+00		2.17E-01
		1274.43	35.50	-9.81E-03		1.04E-01
+	EU-155	86.50	30.90	2.35E-02	5.67E-02	5.67E-02
		105.30	20.70	-1.46E-02		6.79E-02
+	EU-156	811.77	10.40	6.10E-02	2.62E-01	2.62E-01
		1153.47	7.20	5.08E-02		4.44E-01
		1230.71	8.90	-3.37E-02		4.07E-01
+	HO-166M	184.41	72.60	3.79E-02	3.25E-02	3.25E-02
		280.45	29.60	2.78E-03		7.51E-02
		410.94	11.10	4.01E-02		2.27E-01
		711.69	54.10	-4.43E-03		6.29E-02
+	TM-171	66.72	0.14	-1.42E+01	1.37E+01	1.37E+01
+	HF-172	81.75	4.52	-1.49E-01	1.30E-01	3.53E-01
		125.81	11.30	-5.19E-02		1.30E-01
+	LU-172	181.53	20.60	-1.40E-01	4.97E-02	7.98E-02
		810.06	16.63	-1.10E-02		1.56E-01
		912.12	15.25	1.30E-01		2.99E-01
		1093.66	62.50	-1.90E-03		4.97E-02
+	LU-173	100.72	5.24	-1.06E-01	1.10E-01	2.61E-01
		272.11	21.20	3.94E-02		1.10E-01
+	HF-175	343.40	84.00	3.40E-03	3.10E-02	3.10E-02
+	LU-176	88.34	13.30	-2.61E-01	2.63E-02	1.22E-01
		201.83	86.00	6.84E-03		2.63E-02
		306.78	94.00	-1.05E-03		2.73E-02
+	TA-182	67.73	41.20	-3.19E-02	4.36E-02	4.36E-02
		1121.30	34.90	-3.12E-02		8.11E-02
		1189.05	16.23	1.52E-02		2.15E-01
		1221.41	26.98	-1.27E-02		1.41E-01
		1231.02	11.44	8.58E-02		3.34E-01
+	IR-192	308.46	29.68	8.56E-03	5.31E-02	8.51E-02
		468.07	48.10	-2.89E-02		5.31E-02
+	HG-203	279.19	77.30	-9.30E-03	2.73E-02	2.73E-02
+	BI-207	569.67	97.72	-7.07E-03	2.53E-02	2.53E-02
		1063.62	74.90	3.01E-03		4.77E-02

Analysis Report for 1603102-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	TL-208	583.14	30.22	3.99E-02	1.07E-01	1.07E-01
		860.37	4.48	-2.69E-01		5.92E-01
		2614.66	35.85	1.72E-02		1.28E-01
+	BI-210M	262.00	45.00	-1.34E-02	4.84E-02	4.84E-02
		300.00	23.00	-2.01E-02		1.06E-01
+	PB-210	46.50	4.25	4.51E-01	7.39E-01	7.39E-01
+	PB-211	404.84	2.90	5.44E-02	8.91E-01	8.91E-01
		831.96	2.90	3.42E-01		1.27E+00
+	BI-212	727.17	11.80	-1.55E-02	2.59E-01	2.59E-01
		1620.62	2.75	2.72E-01		1.38E+00
+	PB-212	238.63	44.60	3.90E-02	6.07E-02	6.07E-02
		300.09	3.41	-1.36E-01		7.14E-01
+	BI-214	609.31	46.30	-6.16E-04	7.39E-02	7.39E-02
		1120.29	15.10	7.78E-03		1.87E-01
		1764.49	15.80	1.16E-01		3.19E-01
		2204.22	4.98	-4.25E-01		8.41E-01
+	PB-214	295.21	19.19	-8.22E-02	7.74E-02	1.13E-01
		351.92	37.19	1.31E-02		7.74E-02
+	RN-219	401.80	6.50	9.43E-02	4.02E-01	4.02E-01
+	RA-223	323.87	3.88	-1.32E-01	6.61E-01	6.61E-01
+	RA-224	240.98	3.95	3.10E-01	6.91E-01	6.91E-01
+	RA-225	40.00	31.00	-2.17E-02	1.08E-01	1.08E-01
+	RA-226	186.21	3.28	7.28E-01	7.21E-01	7.21E-01
+	TH-227	50.10	8.40	-3.36E-01	2.18E-01	2.74E-01
		236.00	11.50	8.35E-02		2.18E-01
		256.20	6.30	2.76E-02		3.59E-01
+	AC-228	338.32	11.40	9.21E-02	1.64E-01	2.49E-01
		911.07	27.70	8.69E-02		1.64E-01
		969.11	16.60	1.32E-01		2.52E-01
+	TH-230	48.44	16.90	1.31E-01	1.71E-01	1.71E-01
		62.85	4.60	4.10E-01		5.04E-01
		67.67	0.37	-3.55E+00		4.85E+00
+	PA-231	283.67	1.60	-1.98E-01	1.15E+00	1.38E+00
		302.67	2.30	4.98E-02		1.15E+00
+	TH-231	25.64	14.70	4.95E-02	2.60E-01	1.57E+00
		84.21	6.40	5.00E-02		2.60E-01
+	PA-233	311.98	38.60	-1.21E-03	6.01E-02	6.01E-02
+	PA-234	131.20	20.40	-5.78E-03	7.62E-02	7.62E-02
		733.99	8.80	6.38E-02		3.63E-01
		946.00	12.00	-2.55E-02		2.70E-01
+	PA-234M	1001.03	0.92	2.29E+00	4.82E+00	4.82E+00
+	TH-234	63.29	3.80	1.32E-01	5.89E-01	5.89E-01
+	U-235	143.76	10.50	7.99E-02	1.63E-01	1.63E-01
		163.35	4.70	-7.95E-03		3.62E-01
		205.31	4.70	1.75E-01		4.74E-01
+	NP-237	86.50	12.60	5.77E-02	1.39E-01	1.39E-01
+	NP-239	106.10	22.70	3.71E-03	7.15E-02	7.15E-02

Analysis Report for 1603102-02

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	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	NP-239	228.18	10.70	8.49E-02	7.15E-02	2.35E-01
		277.60	14.10	-5.93E-02		1.63E-01
+	AM-241	59.54	35.90	-3.50E-02	5.30E-02	5.30E-02
+	AM-243	74.67	66.00	-7.66E-03	2.74E-02	2.74E-02
+	CM-243	209.75	3.29	-3.11E-01	1.51E-01	6.06E-01
		228.14	10.60	7.90E-02		2.19E-01
		277.60	14.00	-5.51E-02		1.51E-01

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = MDA value not calculated

@ = Half-life too short to be able to perform the decay correction

? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BE-7	477.59	10.42	2.55E-01	2.55E-01	-7.20E-02	1.13E-01
NA-22	1274.54	99.94	3.69E-02	3.69E-02	-3.49E-03	1.49E-02
NA-24	1368.53	99.99	5.28E-02	5.28E-02	2.25E-02	2.14E-02
	2754.09	99.86	5.53E-02		3.97E-03	1.96E-02
AL-26	1808.65	99.76	3.18E-02	3.18E-02	-1.37E-02	1.13E-02
K-40	1460.81	10.67	3.23E-01	3.23E-01	-3.82E-01	1.27E-01
AR-41	1293.64	99.16	4.52E-01	4.52E-01	1.23E-01	1.83E-01
TI-44	67.88	94.40	1.90E-02	1.90E-02	-1.39E-02	8.87E-03
	78.34	96.00	1.93E-02		5.16E-03	9.09E-03
SC-46	889.25	99.98	3.65E-02	2.83E-02	2.00E-02	1.56E-02
	1120.51	99.99	2.83E-02		1.18E-03	1.10E-02
V-48	983.52	99.98	3.87E-02	3.33E-02	8.53E-03	1.65E-02
	1312.10	97.50	3.33E-02		-1.39E-03	1.29E-02
CR-51	320.08	9.83	2.51E-01	2.51E-01	5.08E-02	1.14E-01
MN-54	834.83	99.97	3.19E-02	3.19E-02	-4.59E-03	1.35E-02
CO-56	846.75	99.96	3.74E-02	3.74E-02	1.58E-02	1.62E-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
CO-56	1037.75	14.03	2.86E-01	3.74E-02	4.30E-03	1.22E-01
	1238.25	67.00	5.01E-02		9.55E-03	1.99E-02
	1771.40	15.51	1.60E-01		-1.38E-01	5.06E-02
	2598.48	16.90	1.86E-01		8.43E-03	5.89E-02
CO-57	122.06	85.51	2.08E-02	2.08E-02	1.10E-02	9.74E-03
	136.48	10.60	1.55E-01		1.51E-02	7.17E-02
CO-58	810.76	99.40	2.71E-02	2.71E-02	3.22E-03	1.11E-02
FE-59	1099.22	56.50	5.39E-02	5.39E-02	8.23E-04	2.14E-02
	1291.56	43.20	7.37E-02		3.07E-03	2.86E-02
CO-60	1173.22	100.00	5.48E-02	5.48E-02	4.06E-02	2.41E-02
	1332.49	100.00	5.61E-02		2.84E-02	2.44E-02
ZN-65	1115.52	50.75	6.06E-02	6.06E-02	-8.31E-03	2.40E-02
GA-67	93.31	35.70	7.00E-02	7.00E-02	1.14E-01	3.34E-02
	208.95	2.24	9.23E-01		-7.65E-01	4.25E-01
	300.22	16.00	1.61E-01		-3.06E-02	7.39E-02
SE-75	121.11	16.70	1.04E-01	2.81E-02	3.31E-02	4.84E-02
	136.00	59.20	2.81E-02		5.74E-03	1.31E-02
	264.65	59.80	3.84E-02		1.03E-02	1.77E-02
	279.53	25.20	8.81E-02		2.70E-02	4.02E-02
	400.65	11.40	2.29E-01		8.98E-03	1.03E-01
RB-82	776.52	13.00	2.42E-01	2.42E-01	-3.94E-02	1.03E-01
RB-83	520.41	46.00	5.94E-02	5.94E-02	-1.72E-02	2.61E-02
	529.64	30.30	9.16E-02		2.95E-03	4.03E-02
	552.65	16.40	1.52E-01		-5.09E-02	6.57E-02
KR-85	513.99	0.43	1.07E+01	1.07E+01	9.49E+00	4.99E+00
SR-85	513.99	99.27	4.71E-02	4.71E-02	4.16E-02	2.19E-02
Y-88	898.02	93.40	3.64E-02	3.64E-02	1.03E-02	1.54E-02
	1836.01	99.38	4.56E-02		2.32E-04	1.81E-02
NB-93M	16.57	9.43	3.61E+01	3.61E+01	2.31E+01	1.72E+01
NB-94	702.60	100.00	3.46E-02	3.45E-02	-6.32E-03	1.51E-02
	871.10	100.00	3.45E-02		-1.90E-02	1.47E-02
NB-95	765.79	99.81	3.65E-02	3.65E-02	5.94E-03	1.59E-02
NB-95M	235.69	25.00	1.06E-01	1.06E-01	4.05E-02	4.93E-02
ZR-95	724.18	43.70	6.75E-02	5.09E-02	1.01E-03	2.87E-02
	756.72	55.30	5.09E-02		-1.56E-02	2.13E-02
MO-99	181.06	6.20	2.95E-01	1.95E-01	-1.68E-02	1.36E-01
	739.58	12.80	1.95E-01		-6.91E-02	7.87E-02
	778.00	4.50	7.73E-01		2.89E-01	3.31E-01
RU-103	497.08	89.00	3.23E-02	3.23E-02	-3.30E-03	1.44E-02
RU-106	621.84	9.80	2.52E-01	2.52E-01	-1.59E-01	1.07E-01
AG-108M	433.93	89.90	2.53E-02	2.53E-02	-4.51E-03	1.11E-02
	614.37	90.40	3.65E-02		-1.06E-02	1.62E-02
	722.95	90.50	2.98E-02		-8.64E-03	1.25E-02
CD-109	88.03	3.72	4.40E-01	4.40E-01	-1.77E-01	2.06E-01
AG-110M	657.75	93.14	2.67E-02	2.67E-02	-1.90E-02	1.12E-02
	677.61	10.53	2.64E-01		-1.32E-02	1.12E-01
	706.67	16.46	2.00E-01		-4.92E-02	8.69E-02
	763.93	21.98	1.55E-01		3.04E-02	6.73E-02
	884.67	71.63	4.69E-02		-3.09E-03	1.98E-02
	1384.27	23.94	1.08E-01		-8.75E-03	3.84E-02
CD-113M	263.70	0.02	9.95E+01	9.95E+01	3.70E+01	4.57E+01
SN-113	255.12	1.93	1.19E+00	3.74E-02	6.23E-02	5.49E-01
	391.69	64.90	3.74E-02		-1.47E-03	1.67E-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
TE123M	159.00	84.10	1.79E-02	1.79E-02	-7.83E-03	8.20E-03
SB-124	602.71	97.87	3.68E-02	3.68E-02	8.78E-03	1.65E-02
	645.85	7.26	4.44E-01		-4.65E-02	1.94E-01
	722.78	11.10	2.44E-01		-7.07E-02	1.02E-01
	1691.02	49.00	6.18E-02		1.33E-02	2.19E-02
I-125	35.49	6.49	7.30E-01	7.30E-01	-2.70E-01	3.41E-01
SB-125	176.33	6.89	2.44E-01	8.40E-02	-3.39E-02	1.12E-01
	427.89	29.33	8.40E-02		1.42E-02	3.73E-02
	463.38	10.35	3.17E-01		1.43E-01	1.44E-01
	600.56	17.80	1.97E-01		-1.89E-02	8.82E-02
	635.90	11.32	3.07E-01		-5.97E-02	1.36E-01
SB-126	414.70	83.30	3.32E-02	3.28E-02	1.67E-02	1.50E-02
	666.33	99.60	3.28E-02		-2.25E-02	1.43E-02
	695.00	99.60	3.49E-02		-1.01E-02	1.53E-02
	720.50	53.80	5.31E-02		-1.52E-03	2.24E-02
SN-126	87.57	37.00	4.42E-02	4.42E-02	-1.78E-02	2.07E-02
SB-127	473.00	25.00	1.13E-01	9.14E-02	3.13E-03	5.01E-02
	685.20	35.70	9.14E-02		-1.72E-02	3.96E-02
	783.80	14.70	2.42E-01		4.77E-03	1.04E-01
I-129	29.78	57.00	1.77E-01	1.77E-01	-2.26E-02	8.36E-02
	33.60	13.20	4.31E-01		1.03E-02	2.02E-01
	39.58	7.52	4.49E-01		-9.04E-02	2.09E-01
I-131	284.30	6.05	3.75E-01	3.27E-02	-5.38E-02	1.71E-01
	364.48	81.20	3.27E-02		1.24E-02	1.48E-02
	636.97	7.26	5.12E-01		6.58E-02	2.28E-01
	722.85	1.80	1.53E+00		-4.45E-01	6.42E-01
TE-132	49.72	13.10	1.89E-01	2.79E-02	-2.31E-01	8.80E-02
	228.16	83.00	2.79E-02		1.01E-02	1.30E-02
BA-133	81.00	33.00	5.04E-02	4.90E-02	-8.54E-03	2.36E-02
	302.84	17.80	1.48E-01		6.43E-03	6.84E-02
	356.01	60.00	4.90E-02		1.99E-02	2.25E-02
+ I-133	529.87	* 86.30	3.07E-02	3.07E-02	1.92E-02	1.29E-02
XE-133	81.00	38.00	4.54E-02	4.54E-02	-7.69E-03	2.12E-02
CS-134	563.23	8.38	3.65E-01	3.55E-02	-3.89E-02	1.62E-01
	569.32	15.43	1.60E-01		-8.27E-02	6.87E-02
	604.70	97.60	3.55E-02		-9.38E-03	1.58E-02
	795.84	85.40	3.88E-02		-8.58E-05	1.66E-02
	801.93	8.73	3.22E-01		6.85E-02	1.33E-01
CS-135	268.24	16.00	1.45E-01	1.45E-01	1.59E-02	6.66E-02
I-135	1131.51	22.50	3.50E-01	3.14E-01	5.94E-02	1.46E-01
	1260.41	28.60	3.14E-01		1.17E-01	1.33E-01
	1678.03	9.54	6.27E-01		-3.37E-02	2.22E-01
CS-136	153.22	7.46	2.42E-01	2.20E-02	6.91E-02	1.13E-01
	163.89	4.61	3.75E-01		-8.24E-03	1.73E-01
	176.55	13.56	1.26E-01		-6.65E-03	5.78E-02
	273.65	12.66	1.79E-01		-2.60E-02	8.18E-02
	340.57	48.50	5.53E-02		-1.32E-02	2.53E-02
	818.50	99.70	2.20E-02		-9.17E-04	8.53E-03
	1048.07	79.60	4.94E-02		2.55E-03	2.08E-02
	1235.34	19.70	1.72E-01		9.18E-03	6.82E-02
CS-137	661.65	85.12	4.05E-02	4.05E-02	1.79E-02	1.79E-02
LA-138	788.74	34.00	1.09E-01	6.14E-02	2.13E-02	4.78E-02
	1435.80	66.00	6.14E-02		8.70E-03	2.48E-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
CE-139	165.85	80.35	2.12E-02	2.12E-02	-6.56E-04	9.77E-03
BA-140	162.64	6.70	2.54E-01	1.08E-01	3.59E-02	1.17E-01
	304.84	4.50	6.05E-01		2.76E-01	2.79E-01
	423.70	3.20	8.81E-01		-6.68E-02	3.97E-01
	437.55	2.00	1.38E+00		3.00E-01	6.17E-01
	537.32	25.00	1.08E-01		3.01E-02	4.72E-02
LA-140	328.77	20.50	1.29E-01	4.34E-02	7.94E-03	5.88E-02
	487.03	45.50	7.10E-02		-2.91E-03	3.21E-02
	815.85	23.50	1.09E-01		1.36E-02	4.42E-02
	1596.49	95.49	4.34E-02		7.62E-03	1.72E-02
CE-141	145.44	48.40	3.21E-02	3.21E-02	-5.76E-03	1.48E-02
CE-143	57.36	11.80	1.96E-01	6.45E-02	-2.08E-02	9.16E-02
	293.26	42.00	6.45E-02		1.55E-02	2.95E-02
	664.55	5.20	7.98E-01		2.04E-01	3.54E-01
CE-144	133.54	10.80	1.54E-01	1.54E-01	4.22E-02	7.15E-02
PM-144	476.78	42.00	6.02E-02	3.14E-02	-2.44E-02	2.65E-02
	618.01	98.60	3.14E-02		-4.42E-03	1.37E-02
	696.49	99.49	3.45E-02		-2.97E-03	1.51E-02
PM-145	36.85	21.70	1.99E-01	1.04E-01	7.61E-02	9.32E-02
	37.30	39.70	1.04E-01		5.85E-02	4.88E-02
	42.30	15.10	1.90E-01		-4.64E-02	8.84E-02
	72.40	2.31	7.65E-01		-1.78E-01	3.58E-01
PM-146	453.90	39.94	6.49E-02	6.49E-02	1.21E-02	2.88E-02
	735.90	14.01	2.13E-01		3.89E-02	9.05E-02
	747.13	13.10	2.31E-01		2.54E-02	9.81E-02
ND-147	91.11	28.90	7.67E-02	7.67E-02	3.91E-02	3.65E-02
	531.02	13.10	2.26E-01		7.49E-02	1.00E-01
PM-149	285.90	3.10	8.13E-01	8.13E-01	-5.41E-02	3.72E-01
EU-152	121.78	20.50	8.66E-02	8.66E-02	4.56E-02	4.06E-02
	244.69	5.40	4.39E-01		-7.10E-02	2.03E-01
	344.27	19.13	1.29E-01		-5.90E-02	5.85E-02
	778.89	9.20	3.53E-01		1.78E-01	1.51E-01
	964.01	10.40	2.81E-01		3.98E-02	1.14E-01
	1085.78	7.22	3.81E-01		4.76E-02	1.48E-01
	1112.02	9.60	3.65E-01		0.00E+00	1.50E-01
	1407.95	14.94	2.67E-01		2.84E-02	1.08E-01
GD-153	97.43	31.30	4.52E-02	4.52E-02	-5.16E-02	2.09E-02
	103.18	22.20	6.48E-02		8.77E-03	3.00E-02
EU-154	123.07	40.50	4.20E-02	4.20E-02	1.75E-02	1.96E-02
	723.30	19.70	1.37E-01		-3.97E-02	5.74E-02
	873.19	11.50	3.53E-01		7.45E-02	1.54E-01
	996.32	10.30	2.48E-01		-2.28E-01	9.63E-02
	1004.76	17.90	2.17E-01		0.00E+00	9.25E-02
	1274.45	35.50	1.04E-01		-9.81E-03	4.19E-02
EU-155	86.50	30.90	5.67E-02	5.67E-02	2.35E-02	2.66E-02
	105.30	20.70	6.79E-02		-1.46E-02	3.13E-02
EU-156	811.77	10.40	2.62E-01	2.62E-01	6.10E-02	1.07E-01
	1153.47	7.20	4.44E-01		5.08E-02	1.76E-01
	1230.71	8.90	4.07E-01		-3.37E-02	1.65E-01
HO-166M	184.41	72.60	3.25E-02	3.25E-02	3.79E-02	1.53E-02
	280.45	29.60	7.51E-02		2.78E-03	3.43E-02
	410.94	11.10	2.27E-01		4.01E-02	1.02E-01
	711.69	54.10	6.29E-02		-4.43E-03	2.75E-02

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Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
TM-171	66.72	0.14	1.37E+01	1.37E+01	-1.42E+01	6.41E+00
HF-172	81.75	4.52	3.53E-01	1.30E-01	-1.49E-01	1.64E-01
	125.81	11.30	1.30E-01		-5.19E-02	6.01E-02
LU-172	181.53	20.60	7.98E-02	4.97E-02	-1.40E-01	3.64E-02
	810.06	16.63	1.56E-01		-1.10E-02	6.29E-02
	912.12	15.25	2.99E-01		1.30E-01	1.32E-01
	1093.66	62.50	4.97E-02		-1.90E-03	1.97E-02
LU-173	100.72	5.24	2.61E-01	1.10E-01	-1.06E-01	1.20E-01
	272.11	21.20	1.10E-01		3.94E-02	5.03E-02
HF-175	343.40	84.00	3.10E-02	3.10E-02	3.40E-03	1.41E-02
LU-176	88.34	13.30	1.22E-01	2.63E-02	-2.61E-01	5.70E-02
	201.83	86.00	2.63E-02		6.84E-03	1.23E-02
	305.78	94.00	2.73E-02		-1.05E-03	1.25E-02
TA-182	67.75	41.20	4.36E-02	4.36E-02	-3.19E-02	2.04E-02
	1121.30	34.90	8.11E-02		-3.12E-02	3.14E-02
	1189.05	16.23	2.15E-01		1.52E-02	8.68E-02
	1221.41	26.98	1.41E-01		-1.27E-02	5.77E-02
	1231.02	11.44	3.34E-01		8.58E-02	1.37E-01
IR-192	308.46	29.68	8.51E-02	5.31E-02	8.56E-03	3.90E-02
	468.07	48.10	5.31E-02		-2.89E-02	2.34E-02
HG-203	279.19	77.30	2.73E-02	2.73E-02	-9.30E-03	1.24E-02
BI-207	569.67	97.72	2.53E-02	2.53E-02	-7.07E-03	1.08E-02
	1063.62	74.90	4.77E-02		3.01E-03	1.98E-02
TL-208	583.14	30.22	1.07E-01	1.07E-01	3.99E-02	4.74E-02
	860.37	4.48	5.92E-01		-2.69E-01	2.39E-01
	2614.66	35.85	1.28E-01		1.72E-02	4.81E-02
BI-210M	262.00	45.00	4.84E-02	4.84E-02	-1.34E-02	2.22E-02
	300.00	23.00	1.06E-01		-2.01E-02	4.85E-02
PB-210	46.50	4.25	7.39E-01	7.39E-01	4.51E-01	3.49E-01
PB-211	404.84	2.90	8.91E-01	8.91E-01	5.44E-02	4.00E-01
	831.96	2.90	1.27E+00		3.42E-01	5.48E-01
BI-212	727.17	11.80	2.59E-01	2.59E-01	-1.55E-02	1.11E-01
	1620.62	2.75	1.38E+00		2.72E-01	5.33E-01
PB-212	238.63	44.60	6.07E-02	6.07E-02	3.90E-02	2.84E-02
	300.09	3.41	7.14E-01		-1.36E-01	3.27E-01
BI-214	609.31	46.30	7.39E-02	7.39E-02	-6.16E-04	3.29E-02
	1120.29	15.10	1.87E-01		7.78E-03	7.24E-02
	1764.49	15.80	3.19E-01		1.16E-01	1.31E-01
	2204.23	4.98	8.41E-01		-4.25E-01	3.15E-01
PB-214	295.21	19.19	1.13E-01	7.74E-02	-8.22E-02	5.13E-02
	351.92	37.19	7.74E-02		1.31E-02	3.55E-02
RN-219	401.80	6.50	4.02E-01	4.02E-01	9.43E-02	1.81E-01
RA-223	323.87	3.88	6.61E-01	6.61E-01	-1.32E-01	3.02E-01
RA-224	240.98	3.95	6.91E-01	6.91E-01	3.10E-01	3.24E-01
RA-225	40.00	31.00	1.08E-01	1.08E-01	-2.17E-02	5.00E-02
RA-226	186.21	3.28	7.21E-01	7.21E-01	7.28E-01	3.39E-01
TH-227	50.10	8.40	2.74E-01	2.18E-01	-3.36E-01	1.28E-01
	236.00	11.50	2.18E-01		8.35E-02	1.02E-01
	256.20	6.30	3.59E-01		2.76E-02	1.65E-01
AC-228	338.32	11.40	2.49E-01	1.64E-01	9.21E-02	1.15E-01
	911.07	27.70	1.64E-01		8.69E-02	7.23E-02
	969.11	16.60	2.52E-01		1.32E-01	1.09E-01
TH-230	48.44	16.90	1.71E-01	1.71E-01	1.31E-01	8.07E-02

Analysis Report for 1603102-02

BLANK

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
TH-230	62.85	4.60	5.04E-01	1.71E-01	4.10E-01	2.39E-01
	67.67	0.37	4.85E+00		-3.55E+00	2.27E+00
PA-231	283.67	1.60	1.38E+00	1.15E+00	-1.98E-01	6.31E-01
	302.67	2.30	1.15E+00		4.98E-02	5.29E-01
TH-231	25.64	14.70	1.57E+00	2.60E-01	4.95E-02	7.48E-01
	84.21	6.40	2.60E-01		5.00E-02	1.22E-01
PA-233	311.98	38.60	6.01E-02	6.01E-02	-1.21E-03	2.73E-02
PA-234	131.20	20.40	7.62E-02	7.62E-02	-5.78E-03	3.52E-02
	733.99	8.80	3.63E-01		6.38E-02	1.56E-01
	946.00	12.00	2.70E-01		-2.55E-02	1.12E-01
PA-234M	1001.03	0.92	4.82E+00	4.82E+00	2.29E+00	2.10E+00
TH-234	63.29	3.90	5.89E-01	5.89E-01	1.32E-01	2.79E-01
U-235	143.76	10.50	1.63E-01	1.63E-01	7.99E-02	7.56E-02
	163.35	4.70	3.62E-01		-7.95E-03	1.67E-01
	205.31	4.70	4.74E-01		1.75E-01	2.21E-01
NP-237	86.50	12.60	1.39E-01	1.39E-01	5.77E-02	6.53E-02
NP-239	106.10	22.70	7.15E-02	7.15E-02	3.71E-03	3.32E-02
	228.18	10.70	2.35E-01		8.49E-02	1.09E-01
	277.60	14.10	1.63E-01		-5.93E-02	7.41E-02
AM-241	59.54	35.90	5.30E-02	5.30E-02	-3.50E-02	2.48E-02
AM-243	74.67	66.00	2.74E-02	2.74E-02	-7.66E-03	1.29E-02
CM-243	209.75	3.29	6.06E-01	1.51E-01	-3.11E-01	2.80E-01
	228.14	10.60	2.19E-01		7.90E-02	1.02E-01
	277.60	14.00	1.51E-01		-5.51E-02	6.88E-02

- + = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = MDA value not calculated
 @ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date

Comment

User

Analysis Report for 1603102-02
BLANK

No Data Review Comments Entered.

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: BLANK

Elapsed Live time: 3600

Elapsed Real Time: 3612

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	0	0	0	0
9:	1	98	115	81	47	35	35	34
17:	26	36	23	16	23	25	45	25
25:	40	27	31	33	21	17	14	16
33:	17	14	9	15	14	15	16	8
41:	9	11	13	14	10	17	40	21
49:	12	14	9	10	15	14	12	12
57:	17	10	13	18	17	9	20	37
65:	29	10	20	8	14	20	14	16
73:	11	16	18	21	15	27	16	14
81:	16	10	15	10	23	14	8	14
89:	22	12	13	23	59	44	17	9
97:	8	12	12	10	4	15	6	12
105:	15	9	7	13	12	10	9	10
113:	7	13	7	11	13	12	11	13
121:	16	18	12	15	6	13	5	9
129:	13	8	8	11	11	13	14	10
137:	13	8	11	8	13	12	13	18
145:	11	4	5	8	10	11	9	12
153:	15	14	9	11	7	6	8	11
161:	7	9	13	13	6	8	8	13
169:	11	7	8	5	8	11	4	12
177:	7	9	11	12	5	7	8	5
185:	14	31	26	7	6	9	10	11
193:	9	7	8	9	14	8	8	6
201:	9	5	10	14	15	7	3	9
209:	5	8	8	6	9	6	10	8
217:	9	7	4	5	5	8	5	10
225:	10	8	9	6	9	10	6	4
233:	7	8	5	6	8	10	21	10
241:	9	11	7	7	10	7	8	4
249:	6	10	8	7	6	6	9	4
257:	8	7	5	4	6	6	4	5
265:	10	7	6	6	3	7	5	7
273:	6	8	7	2	4	7	7	4
281:	3	6	6	4	3	10	4	5
289:	7	11	3	4	4	6	6	5
297:	3	4	9	7	5	7	5	10
305:	5	8	5	8	5	2	8	5
313:	3	5	5	2	5	3	4	5
321:	4	7	8	1	9	3	7	7
329:	9	4	4	5	7	4	6	7
337:	6	4	11	7	4	5	3	4
345:	8	5	3	2	7	4	4	9
353:	9	5	5	10	5	7	3	3
361:	3	2	0	6	3	8	7	6

369: 3 3 4 7 0 4 3 2

Sample Title: BLANK

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	3	3	4	2	2	6	3	4
385:	4	1	3	3	3	5	2	4
393:	3	3	4	6	2	5	4	4
401:	4	2	2	6	5	2	3	6
409:	4	2	0	3	2	7	2	4
417:	4	6	2	4	6	5	5	3
425:	3	3	3	6	4	1	1	1
433:	2	5	2	3	3	3	4	5
441:	5	2	2	4	2	2	1	7
449:	4	2	5	4	3	1	3	2
457:	3	2	2	6	7	4	4	5
465:	5	3	1	6	3	0	1	4
473:	5	2	6	3	0	2	3	2
481:	4	3	5	3	9	3	4	2
489:	4	4	4	5	2	4	3	4
497:	4	2	3	2	4	3	4	3
505:	2	2	4	1	6	10	17	26
513:	5	2	5	2	3	4	1	3
521:	2	3	2	2	5	1	0	3
529:	2	5	4	3	1	2	2	3
537:	2	3	1	3	1	1	6	0
545:	5	4	4	1	1	4	3	0
553:	4	0	1	1	1	6	3	2
561:	1	3	3	5	4	2	2	2
569:	1	0	2	3	2	2	2	5
577:	1	2	2	1	4	2	6	2
585:	6	0	3	0	3	3	5	5
593:	4	3	0	3	4	3	4	2
601:	4	3	5	3	5	3	0	4
609:	5	5	4	1	4	1	6	2
617:	2	5	1	0	1	2	4	1
625:	1	2	3	2	3	4	3	0
633:	1	6	3	4	3	4	0	3
641:	7	1	1	4	5	1	3	2
649:	1	2	2	1	3	1	1	1
657:	2	1	0	0	4	7	1	5
665:	2	1	1	3	3	4	3	2
673:	2	2	2	3	0	1	2	1
681:	2	1	2	1	3	3	2	2
689:	2	5	5	3	2	2	2	2
697:	3	3	3	1	2	2	5	3
705:	1	3	4	2	0	2	5	0
713:	3	4	2	1	3	1	2	0
721:	2	1	1	1	2	2	2	3
729:	1	1	3	2	4	2	2	0
737:	0	1	2	1	0	2	0	2
745:	2	1	0	2	3	1	0	3
753:	3	0	0	2	4	1	0	2
761:	1	1	0	4	2	2	4	1
769:	3	2	3	2	1	1	1	2
777:	3	1	2	2	1	1	0	0
785:	4	4	3	2	1	0	3	3
793:	0	3	1	3	1	1	3	1

801: 0 2 0 1 1 1 0 1

Sample Title: BLANK

Channel	-----	-----	-----	-----	-----	-----	-----	-----
809:	0	1	0	3	1	1	1	1
817:	0	1	1	0	0	0	1	0
825:	0	0	2	1	1	1	4	3
833:	1	2	2	1	1	0	2	1
841:	1	1	1	0	1	3	1	1
849:	6	2	0	1	1	0	1	2
857:	1	0	0	3	1	0	1	3
865:	1	3	3	0	1	4	2	0
873:	3	1	3	3	4	1	0	1
881:	4	3	0	0	1	0	2	4
889:	0	2	2	2	0	0	0	0
897:	3	1	3	3	0	2	1	1
905:	2	1	2	1	1	3	8	2
913:	0	4	0	1	1	0	0	2
921:	1	3	1	0	1	0	2	1
929:	2	1	2	1	2	1	1	2
937:	0	1	0	4	1	4	4	0
945:	2	0	0	0	2	0	1	3
953:	1	2	1	1	0	0	0	0
961:	1	1	1	0	1	1	1	3
969:	6	2	1	0	1	0	1	1
977:	1	2	0	2	0	0	1	4
985:	1	3	2	0	0	2	1	1
993:	0	1	1	0	1	1	0	4
1001:	2	2	3	3	0	2	1	0
1009:	1	1	1	1	2	2	0	0
1017:	4	1	2	1	0	5	2	1
1025:	3	2	1	2	0	2	0	0
1033:	0	1	2	2	2	3	1	1
1041:	0	1	3	2	1	1	2	3
1049:	1	2	0	0	1	2	1	2
1057:	3	1	1	2	0	2	0	1
1065:	2	1	1	1	2	5	0	0
1073:	2	0	2	1	0	2	0	2
1081:	0	0	2	0	1	0	0	0
1089:	1	0	1	1	2	0	0	1
1097:	2	0	0	1	1	0	1	1
1105:	2	1	1	1	0	2	2	1
1113:	2	0	0	1	1	0	0	1
1121:	1	1	0	1	0	3	0	3
1129:	0	2	1	0	1	2	0	1
1137:	3	2	1	1	1	1	0	1
1145:	0	2	1	0	1	0	2	1
1153:	1	1	0	0	1	0	0	1
1161:	1	0	3	0	2	1	0	1
1169:	0	1	1	5	6	5	0	0
1177:	0	0	2	0	1	2	1	1
1185:	0	1	1	1	0	1	0	2
1193:	3	2	1	0	0	1	0	2
1201:	1	1	2	2	1	1	1	1
1209:	0	0	0	0	0	2	1	0
1217:	0	4	0	1	1	0	1	0
1225:	1	2	0	1	0	2	0	3

1233: 0 1 0 0 0 1 1 0

Sample Title: BLANK

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1241:	3	0	0	0	2	0	2	1
1249:	1	1	1	1	1	0	0	1
1257:	1	1	2	3	1	2	0	0
1265:	1	0	1	1	0	1	0	2
1273:	0	2	0	0	0	1	0	2
1281:	1	2	1	1	0	0	0	0
1289:	0	0	0	2	2	0	0	2
1297:	0	0	1	1	0	0	1	0
1305:	1	1	0	0	0	1	1	0
1313:	0	1	0	1	1	0	0	0
1321:	4	0	2	1	2	1	0	2
1329:	0	1	1	4	4	0	1	2
1337:	1	0	0	1	1	2	0	0
1345:	0	0	0	1	0	0	0	0
1353:	1	0	0	2	0	0	0	0
1361:	0	0	0	0	0	2	0	1
1369:	0	0	1	2	0	0	1	1
1377:	1	0	1	0	0	0	0	0
1385:	1	1	0	0	0	0	0	0
1393:	1	1	0	0	1	1	1	0
1401:	0	1	0	0	0	0	0	2
1409:	0	3	1	0	0	1	1	1
1417:	0	1	1	0	3	0	0	0
1425:	0	0	0	0	0	1	2	0
1433:	0	0	0	0	0	3	1	2
1441:	0	1	0	0	1	0	0	0
1449:	0	1	0	0	0	2	2	1
1457:	0	0	0	0	2	1	0	0
1465:	3	1	0	0	0	0	1	1
1473:	0	0	1	0	0	0	0	2
1481:	0	0	1	0	1	0	1	1
1489:	0	1	0	0	1	3	1	0
1497:	0	0	1	1	0	1	1	0
1505:	1	0	1	1	0	1	0	0
1513:	0	1	0	2	1	0	1	0
1521:	1	0	0	0	1	0	1	0
1529:	1	0	0	0	0	0	0	1
1537:	0	0	0	4	1	0	0	1
1545:	0	0	0	0	0	0	0	0
1553:	0	1	0	0	0	0	0	0
1561:	0	0	2	0	0	1	0	0
1569:	0	0	0	0	0	0	1	0
1577:	0	1	0	0	1	0	0	0
1585:	0	0	1	1	0	0	0	0
1593:	2	0	1	0	0	1	1	0
1601:	0	1	0	3	1	1	0	1
1609:	0	0	1	0	0	1	0	1
1617:	0	0	0	2	1	0	0	0
1625:	0	0	1	0	0	1	0	0
1633:	0	1	0	0	0	0	1	1
1641:	0	0	0	0	1	0	1	0
1649:	0	0	2	0	0	2	1	1
1657:	1	1	0	0	0	0	0	1

1665: 0 3 1 0 1 1 0 0

Sample Title: BLANK

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1673:	0	0	0	0	0	2	0	0
1681:	0	0	1	0	0	0	0	0
1689:	0	0	1	1	0	0	0	0
1697:	0	0	1	0	0	0	0	1
1705:	0	0	1	0	0	0	3	0
1713:	1	1	0	1	0	0	0	0
1721:	0	0	1	1	1	0	0	1
1729:	2	0	1	2	0	1	1	0
1737:	0	0	0	0	0	1	0	0
1745:	1	0	0	0	0	2	1	1
1753:	0	0	0	0	0	0	0	0
1761:	0	1	0	2	3	1	0	0
1769:	0	0	1	0	0	0	0	0
1777:	0	2	0	0	0	0	0	0
1785:	0	0	1	0	0	0	0	0
1793:	0	0	0	0	1	0	0	1
1801:	0	1	1	1	0	0	0	0
1809:	0	0	1	0	0	1	1	1
1817:	0	0	0	1	0	0	0	0
1825:	0	0	0	0	1	0	0	1
1833:	1	1	0	2	0	0	0	2
1841:	0	0	0	0	1	1	0	0
1849:	0	0	1	0	0	0	0	0
1857:	0	0	2	0	0	0	0	0
1865:	0	0	1	0	0	1	0	1
1873:	0	0	0	0	0	0	1	0
1881:	0	0	0	1	0	1	1	0
1889:	0	1	0	0	1	0	0	0
1897:	0	0	0	0	0	0	0	0
1905:	0	1	0	0	0	0	0	1
1913:	0	0	0	0	0	0	2	0
1921:	0	0	1	0	0	0	0	0
1929:	2	0	0	0	1	0	2	0
1937:	0	1	1	0	0	0	0	0
1945:	0	0	0	0	0	1	1	0
1953:	0	0	1	1	2	1	0	1
1961:	0	0	0	1	0	0	0	0
1969:	0	1	0	1	1	0	0	0
1977:	0	0	0	0	0	0	0	2
1985:	0	0	0	0	1	0	1	0
1993:	0	0	0	0	1	1	0	0
2001:	0	0	1	0	0	0	1	1
2009:	0	1	0	0	1	0	0	1
2017:	0	0	0	0	0	0	0	0
2025:	0	0	0	0	0	0	0	1
2033:	0	1	0	0	0	0	1	1
2041:	0	1	0	0	1	0	0	1
2049:	0	1	0	0	1	1	1	0
2057:	1	0	0	1	0	1	0	0
2065:	0	0	0	1	0	0	0	1
2073:	0	0	1	0	0	0	0	1
2081:	1	0	0	0	0	0	0	0
2089:	0	0	1	0	1	1	0	0

2097: 0 0 0 0 0 0 0 0 1

Sample Title: BLANK

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2105:	0	0	0	0	1	0	0	0
2113:	0	0	0	1	0	0	0	0
2121:	0	0	0	0	0	1	0	1
2129:	0	0	1	1	0	0	0	0
2137:	0	1	0	0	0	0	0	0
2145:	0	0	0	0	0	0	0	0
2153:	0	0	0	0	0	1	0	0
2161:	0	0	0	0	0	1	0	0
2169:	1	0	2	0	0	0	1	0
2177:	0	1	0	1	1	0	0	0
2185:	0	0	0	0	0	0	0	0
2193:	0	0	0	0	0	0	0	1
2201:	0	0	1	0	1	0	0	0
2209:	1	2	1	1	0	0	1	0
2217:	0	0	1	0	0	0	1	0
2225:	0	1	0	0	0	0	1	0
2233:	0	0	1	0	0	1	0	0
2241:	0	0	0	0	0	0	0	2
2249:	0	0	0	0	0	0	1	0
2257:	0	0	1	1	1	0	1	0
2265:	0	0	0	0	0	0	0	0
2273:	0	1	0	0	0	0	0	1
2281:	0	0	0	0	0	0	0	0
2289:	0	0	0	1	1	0	0	0
2297:	0	1	1	1	0	0	0	0
2305:	0	0	0	1	1	0	0	0
2313:	0	1	0	1	1	0	0	0
2321:	1	0	0	0	0	0	0	0
2329:	0	0	0	0	0	0	0	0
2337:	0	0	0	0	0	0	1	0
2345:	0	1	0	0	0	0	1	0
2353:	0	0	1	0	0	0	1	0
2361:	0	0	0	0	0	0	0	1
2369:	0	0	0	0	0	0	0	1
2377:	1	0	0	0	0	0	0	0
2385:	0	0	0	0	0	0	1	0
2393:	0	0	0	0	0	0	0	1
2401:	0	0	0	2	0	0	0	0
2409:	0	0	0	0	0	1	0	0
2417:	0	0	0	1	1	0	1	0
2425:	1	0	0	2	0	0	0	0
2433:	0	0	0	0	0	1	1	1
2441:	1	0	1	1	0	0	0	0
2449:	0	0	1	0	0	0	0	0
2457:	0	0	0	0	0	0	0	1
2465:	1	0	0	0	0	0	0	0
2473:	0	1	2	0	0	0	0	0
2481:	0	0	0	1	0	0	0	1
2489:	0	0	0	0	0	0	0	0
2497:	0	0	0	0	1	1	0	0
2505:	0	0	0	0	0	0	0	0
2513:	0	0	0	0	0	0	1	0
2521:	0	0	1	1	0	0	0	1

2529: 0 0 3 0 0 0 0 0 1

Sample Title: BLANK

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2537:	0	1	0	0	0	0	0	1
2545:	0	0	1	0	0	1	0	1
2553:	0	0	0	0	0	0	0	0
2561:	0	0	1	0	0	1	0	0
2569:	0	1	0	0	0	1	0	0
2577:	0	0	0	0	0	1	0	1
2585:	0	0	0	0	0	1	0	0
2593:	0	0	0	0	0	0	0	0
2601:	0	1	0	1	1	1	1	0
2609:	0	0	0	0	0	2	0	1
2617:	0	0	0	0	0	0	0	1
2625:	0	0	0	1	0	0	0	1
2633:	0	1	0	0	0	0	0	0
2641:	0	0	0	0	0	0	0	2
2649:	1	1	0	0	0	0	1	0
2657:	0	0	1	1	0	1	0	0
2665:	0	0	0	0	0	0	0	0
2673:	0	0	0	0	0	0	0	0
2681:	0	1	0	0	1	1	0	0
2689:	0	1	0	0	0	0	1	0
2697:	0	0	0	1	0	0	0	0
2705:	0	1	1	0	0	1	0	0
2713:	0	0	0	0	0	0	0	0
2721:	1	0	0	0	0	0	0	0
2729:	0	0	0	0	0	1	1	0
2737:	0	0	1	1	0	1	0	0
2745:	0	0	0	0	0	0	1	0
2753:	0	0	0	0	1	1	0	0
2761:	0	0	0	0	0	0	1	0
2769:	0	1	0	0	1	0	0	0
2777:	0	0	1	0	0	0	0	0
2785:	0	0	0	1	0	1	1	0
2793:	0	0	0	0	0	0	0	0
2801:	0	0	0	0	0	0	0	0
2809:	0	0	0	0	0	1	0	0
2817:	0	0	0	0	0	0	1	0
2825:	0	0	0	0	0	0	0	0
2833:	0	0	0	0	0	0	0	0
2841:	0	0	0	1	0	0	0	0
2849:	0	0	0	0	0	0	0	0
2857:	0	0	0	0	0	0	0	1
2865:	0	0	0	1	1	0	0	0
2873:	0	0	0	1	0	0	0	0
2881:	0	0	0	0	0	0	0	0
2889:	1	0	0	0	0	0	0	1
2897:	0	0	0	0	0	0	1	0
2905:	0	0	0	0	0	0	1	0
2913:	0	0	0	0	0	0	0	0
2921:	0	1	0	0	0	0	0	0
2929:	0	0	1	0	1	0	0	0
2937:	0	0	0	0	0	0	0	0
2945:	0	0	0	0	0	0	0	0
2953:	0	0	0	0	0	0	0	1

2961: 0 0 0 0 0 0 0 0 0

Sample Title: BLANK

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2969:	0	0	0	0	0	1	0	1
2977:	0	0	0	0	2	0	0	0
2985:	0	0	0	0	0	0	0	0
2993:	0	0	2	0	0	0	0	0
3001:	0	0	0	0	0	0	0	0
3009:	0	0	0	0	0	0	0	0
3017:	0	0	0	0	0	1	0	0
3025:	0	0	0	0	0	0	0	0
3033:	0	0	0	0	0	0	0	0
3041:	0	0	0	0	0	0	0	0
3049:	0	0	0	1	0	0	0	1
3057:	0	0	0	0	0	0	0	0
3065:	0	0	0	0	0	0	0	0
3073:	0	0	0	1	0	0	0	0
3081:	1	0	1	0	0	0	0	0
3089:	1	0	0	1	0	1	0	0
3097:	0	0	0	0	0	0	0	0
3105:	0	0	0	0	0	0	0	0
3113:	0	1	0	0	0	0	0	0
3121:	0	0	0	0	1	0	0	0
3129:	0	0	0	0	0	0	1	0
3137:	0	0	0	0	0	1	0	0
3145:	1	0	0	0	0	0	0	0
3153:	0	0	0	0	0	0	2	0
3161:	0	1	0	0	0	0	0	0
3169:	0	0	0	0	0	0	0	1
3177:	0	0	0	0	1	0	0	0
3185:	0	0	0	1	0	1	0	0
3193:	0	0	0	0	0	0	0	0
3201:	0	1	0	0	0	1	0	1
3209:	0	0	0	0	0	0	0	0
3217:	0	0	0	0	1	1	0	0
3225:	0	0	0	0	0	0	1	0
3233:	0	0	0	0	0	1	1	0
3241:	0	0	0	0	0	0	0	0
3249:	1	0	0	0	0	0	0	0
3257:	0	0	0	0	1	0	0	0
3265:	0	0	0	0	0	0	0	0
3273:	0	0	1	0	0	0	1	0
3281:	0	0	0	0	0	0	0	0
3289:	0	1	0	0	0	0	0	0
3297:	0	0	0	0	0	0	1	0
3305:	0	0	1	0	1	0	0	0
3313:	1	0	1	0	0	0	0	1
3321:	0	0	0	0	0	0	0	0
3329:	0	0	0	0	0	0	0	0
3337:	0	2	0	0	0	0	1	0
3345:	0	0	0	0	0	0	0	0
3353:	0	0	0	0	0	0	0	0
3361:	0	0	0	1	1	0	0	0
3369:	0	0	0	0	0	0	0	0
3377:	1	0	0	1	0	1	1	0
3385:	1	0	0	0	0	0	0	0

3393: 1 0 0 0 0 0 0 0

Sample Title: BLANK

Channel	-----	-----	-----	-----	-----	-----	-----	-----
3401:	0	1	1	0	0	0	0	0
3409:	0	1	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	1
3433:	0	0	0	0	0	0	0	0
3441:	0	1	0	0	0	0	2	1
3449:	0	0	0	0	0	1	0	0
3457:	0	1	1	0	0	0	0	1
3465:	0	0	0	0	0	0	0	0
3473:	0	0	1	0	0	0	0	0
3481:	0	0	0	0	0	0	0	0
3489:	0	0	0	0	0	0	0	0
3497:	0	0	0	0	0	0	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	0	0	0	0	0	0
3521:	0	0	0	0	0	0	0	0
3529:	1	0	0	0	0	0	1	0
3537:	0	0	0	0	0	1	0	0
3545:	0	0	0	0	1	0	1	0
3553:	0	0	0	0	1	0	0	0
3561:	0	0	0	0	0	1	0	0
3569:	0	0	0	0	0	0	0	0
3577:	0	0	0	0	0	0	0	1
3585:	0	1	0	0	0	0	0	1
3593:	0	0	0	1	0	0	0	0
3601:	0	0	0	0	0	0	0	0
3609:	1	0	0	0	0	0	0	0
3617:	0	0	0	0	1	0	0	0
3625:	0	0	0	0	0	0	0	0
3633:	1	0	0	1	0	0	0	0
3641:	0	0	0	0	0	0	0	1
3649:	0	0	0	0	0	0	0	0
3657:	1	1	0	1	1	0	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	0	0	0	0	0
3681:	0	0	0	0	0	0	1	1
3689:	0	0	0	0	0	0	0	0
3697:	0	0	0	0	0	0	0	0
3705:	1	0	0	0	0	0	0	0
3713:	0	0	0	0	0	0	0	0
3721:	0	0	0	0	0	0	0	0
3729:	0	0	0	0	0	0	0	1
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	1	1	0	0	0
3753:	0	1	0	0	0	0	0	0
3761:	1	0	0	0	0	0	0	0
3769:	0	0	0	0	0	0	1	0
3777:	0	0	0	0	0	0	2	0
3785:	1	1	0	0	0	0	1	0
3793:	0	0	0	0	0	0	0	0
3801:	0	0	1	0	1	0	0	0
3809:	0	0	1	0	0	0	0	0
3817:	0	0	0	0	0	0	0	0

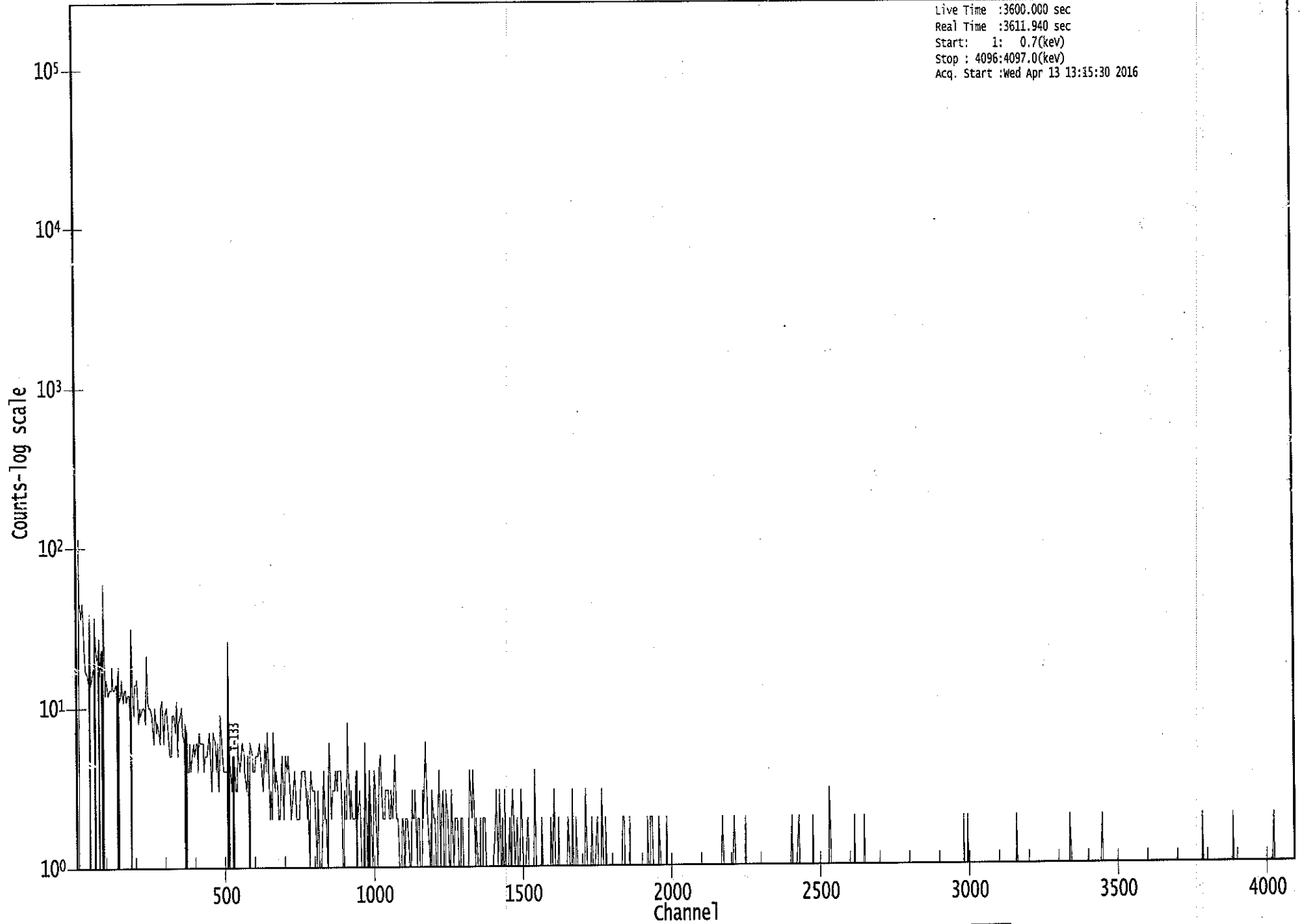
3825: 0 0 0 0 0 1 0 0

Sample Title: BLANK

Channel	-----	-----	-----	-----	-----	-----	-----	-----
3833:	0	0	1	1	1	0	0	0
3841:	0	0	0	0	0	0	0	1
3849:	0	0	0	0	0	0	0	0
3857:	0	0	0	0	1	0	0	0
3865:	1	0	0	0	0	0	0	0
3873:	0	0	0	0	0	1	0	0
3881:	0	0	0	0	2	0	0	0
3889:	0	0	0	0	1	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	1	0	1	0	0	0	0	0
3913:	0	0	1	1	0	0	0	0
3921:	0	0	0	0	0	0	0	0
3929:	0	0	0	0	1	0	0	0
3937:	0	0	1	0	0	0	0	0
3945:	0	0	0	0	0	0	0	0
3953:	0	0	0	0	0	0	1	0
3961:	0	0	1	0	0	0	0	0
3969:	0	0	1	0	0	0	0	0
3977:	0	0	0	0	0	0	0	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	1	1	0	0
4017:	0	1	1	0	0	0	0	2
4025:	0	0	0	0	0	1	0	0
4033:	0	1	1	0	0	0	0	1
4041:	0	0	0	0	0	0	0	0
4049:	0	1	0	0	1	0	1	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	1	0	0	0	0	0
4073:	1	0	1	0	0	0	0	0
4081:	0	1	0	0	0	0	0	0
4089:	0	0	0	0	0	0	0	0

0000035733.CNF

Live Time :3600.000 sec
Real Time :3611.940 sec
Start: 1: 0.7(keV)
Stop : 4096:4097.0(keV)
Acq. Start :Wed Apr 13 13:15:30 2016



ROI Type: 1

ROI Type: 2

Analysis Report for 1603102-03
SEDIMENT 2016-03-16A

4113

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1603102-03
Sample Description	: SEDIMENT 2016-03-16A
Sample Type	: SOIL
Sample Size	: 4.476E+02 grams
Facility	: Countroom
Sample Taken On	: 3/16/2016 1:44:26PM
Acquisition Started	: 4/13/2016 7:02:38AM
Procedure	: GAS-1402 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-1402
Live Time	: 3600.0 seconds
Real Time	: 3612.5 seconds
Dead Time	: 0.35 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 10/25/2014
Efficiency Calibration Used Done On	: 10/25/2014
Efficiency Calibration Description	:
Sample Number	: 35692

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
4/13/16

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

PEAK LOCATE REPORT

Peak Locate Performed on : 4/13/2016 8:02:52AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	46.79	47.02	0.0000	0.00
2	62.93	63.15	0.0000	0.00
3	75.10	75.32	0.0000	0.00
4	77.58	77.79	0.0000	0.00
5	87.94	88.15	0.0000	0.00
6	92.92	93.13	0.0000	0.00
7	129.32	129.50	0.0000	0.00
8	186.62	186.78	0.0000	0.00
9	209.13	209.27	0.0000	0.00
10	239.02	239.15	0.0000	0.00
11	242.23	242.36	0.0000	0.00
12	295.59	295.69	0.0000	0.00
13	338.65	338.73	0.0000	0.00
14	352.33	352.40	0.0000	0.00
15	384.73	384.78	0.0000	0.00
16	410.28	410.33	0.0000	0.00
17	463.64	463.65	0.0000	0.00
18	511.69	511.68	0.0000	0.00
19	535.95	535.93	0.0000	0.00
20	579.46	579.42	0.0000	0.00
21	583.44	583.40	0.0000	0.00
22	604.72	604.66	0.0000	0.00
23	609.63	609.57	0.0000	0.00
24	651.87	651.80	0.0000	0.00
25	657.08	657.00	0.0000	0.00
26	714.75	714.64	0.0000	0.00
27	727.73	727.62	0.0000	0.00
28	769.79	769.65	0.0000	0.00
29	795.96	795.82	0.0000	0.00
30	911.20	911.01	0.0000	0.00
31	933.87	933.66	0.0000	0.00
32	970.18	969.96	0.0000	0.00
33	1011.24	1011.00	0.0000	0.00
34	1115.57	1115.28	0.0000	0.00
35	1120.65	1120.36	0.0000	0.00
36	1238.10	1237.77	0.0000	0.00
37	1248.34	1248.00	0.0000	0.00
38	1255.45	1255.11	0.0000	0.00
39	1378.35	1377.96	0.0000	0.00
40	1433.11	1432.70	0.0000	0.00
41	1460.86	1460.44	0.0000	0.00
42	1508.15	1507.71	0.0000	0.00

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1589.28	1588.81	0.0000	0.00
44	1728.57	1728.05	0.0000	0.00
45	1764.55	1764.02	0.0000	0.00
46	1846.61	1846.05	0.0000	0.00
47	2119.62	2118.98	0.0000	0.00
48	2204.93	2204.26	0.0000	0.00
49	2447.24	2446.50	0.0000	0.00
50	2614.27	2613.49	0.0000	0.00

? = Adjacent peak noted

Errors quoted at 2.000sigma

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/13/2016 8:02:52AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	46.79	44 -	49	47.02	2.14E+02	64.89	6.75E+02	1.44
	2	62.93	59 -	66	63.15	1.60E+02	88.70	1.21E+03	1.65
M	3	75.10	71 -	81	75.32	3.21E+02	78.76	8.95E+02	1.83
m	4	77.58	71 -	81	77.79	5.93E+02	86.62	8.80E+02	1.83
M	5	87.94	83 -	97	88.15	1.72E+02	64.43	7.30E+02	1.68
m	6	92.92	83 -	97	93.13	2.15E+02	65.60	6.23E+02	1.69
	7	129.32	127 -	132	129.50	5.60E+01	55.44	5.70E+02	2.26
	8	186.62	183 -	191	186.78	1.75E+02	72.10	6.91E+02	1.80
	9	209.13	205 -	213	209.27	1.05E+02	66.23	6.07E+02	2.18
M	10	239.02	235 -	248	239.15	5.56E+02	60.60	3.15E+02	1.94
m	11	242.23	235 -	248	242.36	1.89E+02	63.81	2.79E+02	2.08
	12	295.59	292 -	300	295.69	2.15E+02	64.12	5.11E+02	1.45
	13	338.65	334 -	342	338.73	8.16E+01	48.68	3.13E+02	1.64
	14	352.33	348 -	356	352.40	4.78E+02	60.52	2.69E+02	1.95
	15	384.73	379 -	393	384.78	5.03E+01	61.32	3.73E+02	5.64
	16	410.28	407 -	413	410.33	3.24E+01	34.38	1.89E+02	1.66
	17	463.64	460 -	467	463.65	3.20E+01	35.04	1.82E+02	1.50
	18	511.69	506 -	517	511.68	1.18E+02	45.21	1.93E+02	3.08
	19	535.95	532 -	540	535.93	2.70E+01	30.45	1.26E+02	2.15
M	20	579.46	578 -	588	579.42	1.38E+01	12.30	3.79E+01	2.40
m	21	583.44	578 -	588	583.40	1.49E+02	30.28	5.98E+01	1.85
M	22	604.72	603 -	617	604.66	1.22E+01	16.12	4.86E+01	2.66
m	23	609.63	603 -	617	609.57	3.46E+02	41.32	8.22E+01	1.96
M	24	651.87	648 -	664	651.80	2.14E+01	23.54	8.13E+01	2.23
m	25	657.08	648 -	664	657.00	1.85E+01	21.10	7.55E+01	2.03
	26	714.75	709 -	722	714.64	6.04E+01	38.04	1.37E+02	10.17
	27	727.73	725 -	731	727.62	2.91E+01	24.30	8.37E+01	1.75
	28	769.79	763 -	782	769.65	4.13E+01	51.85	2.11E+02	7.33
	29	795.96	792 -	799	795.82	2.27E+01	21.63	6.06E+01	2.16
	30	911.20	907 -	916	911.01	7.92E+01	30.82	9.16E+01	1.98
	31	933.87	928 -	939	933.66	3.49E+01	22.89	4.83E+01	7.18
	32	970.18	965 -	976	969.96	5.19E+01	33.11	1.02E+02	2.53
m	33	1011.24	998 -	1013	1011.00	1.74E+01	12.57	1.61E+01	2.22
M	34	1115.57	1114 -	1125	1115.28	1.56E+01	8.49	1.77E+01	2.74
m	35	1120.65	1114 -	1125	1120.36	9.01E+01	26.68	6.37E+01	2.68
M	36	1238.10	1223 -	1259	1237.77	2.80E+01	22.88	6.46E+01	3.09
m	37	1248.34	1223 -	1259	1248.00	1.51E+01	17.76	4.11E+01	2.33
m	38	1255.45	1223 -	1259	1255.11	1.76E+01	20.58	4.87E+01	3.10
	39	1378.35	1372 -	1384	1377.96	2.31E+01	19.16	3.18E+01	2.70
	40	1433.11	1429 -	1435	1432.70	8.00E+00	10.44	1.40E+01	2.91

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	1460.86	1453 -	1466	1460.44	3.55E+02	41.63	3.46E+01	2.33
42	1508.15	1502 -	1511	1507.71	2.17E+01	12.57	1.06E+01	2.86
43	1589.28	1584 -	1595	1588.81	1.70E+01	12.81	1.20E+01	3.29
44	1728.57	1723 -	1732	1728.05	1.80E+01	11.92	1.00E+01	3.46
45	1764.55	1759 -	1767	1764.02	4.01E+01	19.12	3.19E+01	2.94
46	1846.61	1842 -	1850	1846.05	1.10E+01	11.52	1.40E+01	4.59
47	2119.62	2115 -	2123	2118.98	8.17E+00	9.41	7.67E+00	2.76
48	2204.93	2199 -	2210	2204.26	1.75E+01	10.77	5.05E+00	3.92
49	2447.24	2443 -	2449	2446.50	8.00E+00	5.66	0.00E+00	1.33
50	2614.27	2609 -	2617	2613.49	4.70E+01	13.71	0.00E+00	2.45

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/13/2016 8:02:52AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	46.79	44 -	49	2.14E+02	64.89	6.75E+02	4.76E+01
	2	62.93	59 -	66	1.60E+02	88.70	1.21E+03	6.99E+01
M	3	75.10	71 -	81	3.21E+02	78.76	8.95E+02	4.92E+01
m	4	77.58	71 -	81	5.93E+02	86.62	8.80E+02	4.88E+01
M	5	87.94	83 -	97	1.72E+02	64.43	7.30E+02	4.44E+01
m	6	92.92	83 -	97	2.15E+02	65.60	6.23E+02	4.10E+01
	7	129.32	127 -	132	5.60E+01	55.44	5.70E+02	4.39E+01
	8	186.62	183 -	191	1.75E+02	72.10	6.91E+02	5.51E+01
	9	209.13	205 -	213	1.05E+02	66.23	6.07E+02	5.18E+01
M	10	239.02	235 -	248	5.56E+02	60.60	3.15E+02	2.92E+01
m	11	242.23	235 -	248	1.89E+02	63.81	2.79E+02	2.75E+01
	12	295.59	292 -	300	2.15E+02	64.12	5.11E+02	4.69E+01
	13	338.65	334 -	342	8.16E+01	48.68	3.13E+02	3.72E+01
	14	352.33	348 -	356	4.78E+02	60.52	2.69E+02	3.44E+01
	15	384.73	379 -	393	5.03E+01	61.32	3.73E+02	4.90E+01
	16	410.28	407 -	413	3.24E+01	34.38	1.89E+02	2.67E+01
	17	463.64	460 -	467	3.20E+01	35.04	1.82E+02	2.73E+01

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	18	511.69	506 -	517	1.18E+02	45.21	1.93E+02	3.26E+01
	19	535.95	532 -	540	2.70E+01	30.45	1.26E+02	2.35E+01
M	20	579.46	578 -	588	1.38E+01	12.30	3.79E+01	1.01E+01
m	21	583.44	578 -	588	1.49E+02	30.28	5.98E+01	1.27E+01
M	22	604.72	603 -	617	1.22E+01	16.12	4.86E+01	1.15E+01
m	23	609.63	603 -	617	3.46E+02	41.32	8.22E+01	1.49E+01
M	24	651.87	648 -	664	2.14E+01	23.54	8.13E+01	1.48E+01
m	25	657.08	648 -	664	1.85E+01	21.10	7.55E+01	1.43E+01
	26	714.75	709 -	722	6.04E+01	38.04	1.37E+02	2.85E+01
	27	727.73	725 -	731	2.91E+01	24.30	8.37E+01	1.79E+01
	28	769.79	763 -	782	4.13E+01	51.85	2.11E+02	4.13E+01
	29	795.96	792 -	799	2.27E+01	21.63	6.06E+01	1.60E+01
	30	911.20	907 -	916	7.92E+01	30.82	9.16E+01	2.07E+01
	31	933.87	928 -	939	3.49E+01	22.89	4.83E+01	1.61E+01
	32	970.18	965 -	976	5.19E+01	33.11	1.02E+02	2.45E+01
in	33	1011.24	998 -	1013	1.74E+01	12.57	1.61E+01	6.59E+00
M	34	1115.57	1114 -	1125	1.56E+01	8.49	1.77E+01	6.93E+00
m	35	1120.65	1114 -	1125	9.01E+01	26.68	6.37E+01	1.31E+01
M	36	1238.10	1223 -	1259	2.80E+01	22.88	6.46E+01	1.32E+01
m	37	1248.34	1223 -	1259	1.51E+01	17.76	4.11E+01	1.05E+01
m	38	1255.45	1223 -	1259	1.76E+01	20.58	4.87E+01	1.15E+01
	39	1378.35	1372 -	1384	2.31E+01	19.16	3.18E+01	1.36E+01
	40	1433.11	1429 -	1435	8.00E+00	10.44	1.40E+01	7.21E+00
	41	1460.86	1453 -	1466	3.55E+02	41.63	3.46E+01	1.46E+01
	42	1508.15	1502 -	1511	2.17E+01	12.57	1.06E+01	6.94E+00
	43	1589.28	1584 -	1595	1.70E+01	12.81	1.20E+01	8.05E+00
	44	1728.57	1723 -	1732	1.80E+01	11.92	1.00E+01	6.88E+00
	45	1764.55	1759 -	1767	4.01E+01	19.12	3.19E+01	1.18E+01
	46	1846.61	1842 -	1850	1.10E+01	11.52	1.40E+01	7.74E+00
	47	2119.62	2115 -	2123	8.17E+00	9.41	7.67E+00	6.14E+00
	48	2204.93	2199 -	2210	1.75E+01	10.77	5.05E+00	5.58E+00
	49	2447.24	2443 -	2449	8.00E+00	5.66	0.00E+00	0.00E+00
	50	2614.27	2609 -	2617	4.70E+01	13.71	0.00E+00	0.00E+00

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

PEAK WITH NID REPORT

Peak Analysis Performed on : 4/13/2016 8:02:52AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Peak Match Tolerance : 1.000 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	46.79	44 -	49	47.02	2.14E+02	64.89	6.75E+02	PB-210
	2	62.93	59 -	66	63.15	1.60E+02	88.70	1.21E+03	TH-230
									TH-234
M	3	75.10	71 -	81	75.32	3.21E+02	78.76	8.95E+02	AM-243
m	4	77.58	71 -	81	77.79	5.93E+02	86.62	8.80E+02	TI-44
M	5	87.94	83 -	97	88.15	1.72E+02	64.43	7.30E+02	CD-109
									SN-126
									LU-176
m	6	92.92	83 -	97	93.13	2.15E+02	65.60	6.23E+02	GA-67
	7	129.32	127 -	132	129.50	5.60E+01	55.44	5.70E+02	.....
	8	186.62	183 -	191	186.78	1.75E+02	72.10	6.91E+02	RA-226
	9	209.13	205 -	213	209.27	1.05E+02	66.23	6.07E+02	GA-67
									CM-243
M	10	239.02	235 -	248	239.15	5.56E+02	60.60	3.15E+02	PB-212
m	11	242.23	235 -	248	242.36	1.89E+02	63.81	2.79E+02	.....
	12	295.59	292 -	300	295.69	2.15E+02	64.12	5.11E+02	PB-214
	13	338.65	334 -	342	338.73	8.16E+01	48.68	3.13E+02	AC-228
	14	352.33	348 -	356	352.40	4.78E+02	60.52	2.69E+02	PB-214
	15	384.73	379 -	393	384.78	5.03E+01	61.32	3.73E+02	.....
	16	410.28	407 -	413	410.33	3.24E+01	34.38	1.89E+02	HO-166M
	17	463.64	460 -	467	463.65	3.20E+01	35.04	1.82E+02	SB-125
	18	511.69	506 -	517	511.68	1.18E+02	45.21	1.93E+02	.....
	19	535.95	532 -	540	535.93	2.70E+01	30.45	1.26E+02	.....
M	20	579.46	578 -	588	579.42	1.38E+01	12.30	3.79E+01	.....
m	21	583.44	578 -	588	583.40	1.49E+02	30.28	5.98E+01	TL-208
M	22	604.72	603 -	617	604.66	1.22E+01	16.12	4.86E+01	CS-134
m	23	609.63	603 -	617	609.57	3.46E+02	41.32	8.22E+01	BI-214
M	24	651.87	648 -	664	651.80	2.14E+01	23.54	8.13E+01	.....
m	25	657.08	648 -	664	657.00	1.85E+01	21.10	7.55E+01	AG-110M
	26	714.75	709 -	722	714.64	6.04E+01	38.04	1.37E+02	.....
	27	727.73	725 -	731	727.62	2.91E+01	24.30	8.37E+01	BI-212
	28	769.79	763 -	782	769.65	4.13E+01	51.85	2.11E+02	.....
	29	795.96	792 -	799	795.82	2.27E+01	21.63	6.06E+01	CS-134
	30	911.20	907 -	916	911.01	7.92E+01	30.82	9.16E+01	AC-228
									LU-172
	31	933.87	928 -	939	933.66	3.49E+01	22.89	4.83E+01	.....
	32	970.18	965 -	976	969.96	5.19E+01	33.11	1.02E+02	.....
m	33	1011.24	998 -	1013	1011.00	1.74E+01	12.57	1.61E+01	.....
M	34	1115.57	1114 -	1125	1115.28	1.56E+01	8.49	1.77E+01	ZN-65
m	35	1120.65	1114 -	1125	1120.36	9.01E+01	26.68	6.37E+01	SC-46
									BI-214

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
									TA-182
M	36	1238.10	1223 -	1259	1237.77	2.80E+01	22.88	6.46E+01	CO-56
m	37	1248.34	1223 -	1259	1248.00	1.51E+01	17.76	4.11E+01	.....
m	38	1255.45	1223 -	1259	1255.11	1.76E+01	20.58	4.87E+01	.....
	39	1378.35	1372 -	1384	1377.96	2.31E+01	19.16	3.18E+01	.....
	40	1433.11	1429 -	1435	1432.70	8.00E+00	10.44	1.40E+01	.....
	41	1460.86	1453 -	1466	1460.44	3.55E+02	41.63	3.46E+01	K-40
	42	1508.15	1502 -	1511	1507.71	2.17E+01	12.57	1.06E+01	.....
	43	1589.28	1584 -	1595	1588.81	1.70E+01	12.81	1.20E+01	.....
	44	1728.57	1723 -	1732	1728.05	1.80E+01	11.92	1.00E+01	.....
	45	1764.55	1759 -	1767	1764.02	4.01E+01	19.12	3.19E+01	BI-214
	46	1846.61	1842 -	1850	1846.05	1.10E+01	11.52	1.40E+01	.....
	47	2119.62	2115 -	2123	2118.98	8.17E+00	9.41	7.67E+00	.....
	48	2204.93	2199 -	2210	2204.26	1.75E+01	10.77	5.05E+00	BI-214
	49	2447.24	2443 -	2449	2446.50	8.00E+00	5.66	0.00E+00	.....
	50	2614.27	2609 -	2617	2613.49	4.70E+01	13.71	0.00E+00	TL-208

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 4/13/2016 8:02:52AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	46.79	2.14E+02	64.89	1.52E-02	1.58E-03
	2	62.93	1.60E+02	88.70	2.15E-02	1.70E-03
M	3	75.10	3.21E+02	78.76	2.37E-02	2.10E-03
m	4	77.58	5.93E+02	86.62	2.39E-02	2.18E-03
M	5	87.94	1.72E+02	64.43	2.44E-02	2.52E-03
m	6	92.92	2.15E+02	65.60	2.44E-02	2.41E-03
	7	129.32	5.60E+01	55.44	2.25E-02	1.70E-03
	8	186.62	1.75E+02	72.10	1.82E-02	1.42E-03
	9	209.13	1.05E+02	66.23	1.68E-02	1.31E-03
M	10	239.02	5.56E+02	60.60	1.52E-02	1.18E-03
m	11	242.23	1.89E+02	63.81	1.50E-02	1.16E-03
	12	295.59	2.15E+02	64.12	1.28E-02	9.74E-04
	13	338.65	8.16E+01	48.68	1.14E-02	9.12E-04
	14	352.33	4.78E+02	60.52	1.10E-02	8.93E-04

: 00252

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	15	384.73	5.03E+01	61.32	1.02E-02	8.47E-04
	16	410.28	3.24E+01	34.38	9.69E-03	8.19E-04
	17	463.64	3.20E+01	35.04	8.72E-03	7.65E-04
	18	511.69	1.18E+02	45.21	8.00E-03	7.17E-04
	19	535.95	2.70E+01	30.45	7.68E-03	6.93E-04
M	20	579.46	1.38E+01	12.30	7.18E-03	6.50E-04
m	21	583.44	1.49E+02	30.28	7.14E-03	6.46E-04
M	22	604.72	1.22E+01	16.12	6.92E-03	6.25E-04
m	23	609.63	3.46E+02	41.32	6.87E-03	6.20E-04
M	24	651.87	2.14E+01	23.54	6.48E-03	5.78E-04
m	25	657.08	1.85E+01	21.10	6.43E-03	5.72E-04
	26	714.75	6.04E+01	38.04	5.98E-03	5.24E-04
	27	727.73	2.91E+01	24.30	5.89E-03	5.14E-04
	28	769.79	4.13E+01	51.85	5.61E-03	4.79E-04
	29	795.96	2.27E+01	21.63	5.45E-03	4.58E-04
	30	911.20	7.92E+01	30.82	4.85E-03	3.72E-04
	31	933.87	3.49E+01	22.89	4.75E-03	3.68E-04
	32	970.18	5.19E+01	33.11	4.60E-03	3.61E-04
m	33	1011.24	1.74E+01	12.57	4.44E-03	3.54E-04
M	34	1115.57	1.56E+01	8.49	4.09E-03	3.34E-04
m	35	1120.65	9.01E+01	26.68	4.08E-03	3.33E-04
M	36	1238.10	2.80E+01	22.88	3.76E-03	3.09E-04
m	37	1248.34	1.51E+01	17.76	3.73E-03	3.07E-04
m	38	1255.45	1.76E+01	20.58	3.71E-03	3.05E-04
	39	1378.35	2.31E+01	19.16	3.45E-03	2.82E-04
	40	1433.11	8.00E+00	10.44	3.34E-03	2.73E-04
	41	1460.86	3.55E+02	41.63	3.29E-03	2.69E-04
	42	1508.15	2.17E+01	12.57	3.21E-03	2.62E-04
	43	1589.28	1.70E+01	12.81	3.09E-03	2.50E-04
	44	1728.57	1.80E+01	11.92	2.90E-03	2.29E-04
	45	1764.55	4.01E+01	19.12	2.86E-03	2.24E-04
	46	1846.61	1.10E+01	11.52	2.77E-03	2.13E-04
	47	2119.62	8.17E+00	9.41	2.52E-03	2.13E-04
	48	2204.93	1.75E+01	10.77	2.46E-03	2.13E-04
	49	2447.24	8.00E+00	5.66	2.32E-03	2.13E-04
	50	2614.27	4.70E+01	13.71	2.24E-03	2.13E-04

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/13/2016 8:02:52AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000035178.CNF

: 00250

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	46.79	2.14E+02	64.89	3.04E+01	2.01E+01	1.83E+02	6.79E+01
	2	62.93	1.60E+02	88.70	5.41E+01	5.13E+00	1.06E+02	8.88E+01
M	3	75.10	3.21E+02	78.76			3.21E+02	7.88E+01
m	4	77.58	5.93E+02	86.62			5.93E+02	8.66E+01
M	5	87.94	1.72E+02	64.43	3.05E+00	2.15E+00	1.69E+02	6.45E+01
m	6	92.92	2.15E+02	65.60	7.72E+01	4.69E+00	1.38E+02	6.58E+01
	7	129.32	5.60E+01	55.44	5.56E+00	6.45E+00	5.04E+01	5.58E+01
	8	186.62	1.75E+02	72.10	3.82E+01	5.87E+00	1.36E+02	7.23E+01
	9	209.13	1.05E+02	66.23			1.05E+02	6.62E+01
M	10	239.02	5.56E+02	60.60	1.06E+01	5.71E+00	5.45E+02	6.09E+01
m	11	242.23	1.89E+02	63.81			1.89E+02	6.38E+01
	12	295.59	2.15E+02	64.12			2.15E+02	6.41E+01
	13	338.65	8.16E+01	48.68			8.16E+01	4.87E+01
	14	352.33	4.78E+02	60.52	0.00E+00	0.00E+00	4.78E+02	6.05E+01
	15	384.73	5.03E+01	61.32			5.03E+01	6.13E+01
	16	410.28	3.24E+01	34.38			3.24E+01	3.44E+01
	17	463.64	3.20E+01	35.04			3.20E+01	3.50E+01
	18	511.69	1.18E+02	45.21	5.95E+01	4.92E+00	5.80E+01	4.55E+01
	19	535.95	2.70E+01	30.45			2.70E+01	3.04E+01
M	20	579.46	1.38E+01	12.30			1.38E+01	1.23E+01
m	21	583.44	1.49E+02	30.28	5.06E+00	2.98E+00	1.44E+02	3.04E+01
M	22	604.72	1.22E+01	16.12			1.22E+01	1.61E+01
m	23	609.63	3.46E+02	41.32	2.01E+00	3.84E+00	3.44E+02	4.15E+01
M	24	651.87	2.14E+01	23.54			2.14E+01	2.35E+01
m	25	657.08	1.35E+01	21.10			1.85E+01	2.11E+01
	26	714.75	6.04E+01	38.04			6.04E+01	3.80E+01
	27	727.73	2.91E+01	24.30			2.91E+01	2.43E+01
	28	769.79	4.13E+01	51.85			4.13E+01	5.18E+01
	29	795.96	2.27E+01	21.63			2.27E+01	2.16E+01
	30	911.20	7.92E+01	30.82	2.99E+00	2.93E+00	7.62E+01	3.10E+01
	31	933.87	3.49E+01	22.89			3.49E+01	2.29E+01
	32	970.18	5.19E+01	33.11			5.19E+01	3.31E+01
m	33	1011.24	1.74E+01	12.57			1.74E+01	1.26E+01
M	34	1115.57	1.56E+01	8.49			1.56E+01	8.49E+00
m	35	1120.65	9.01E+01	26.68			9.01E+01	2.67E+01
M	36	1238.10	2.80E+01	22.88			2.80E+01	2.29E+01
m	37	1248.34	1.51E+01	17.76			1.51E+01	1.78E+01
m	38	1255.45	1.76E+01	20.58			1.76E+01	2.06E+01
	39	1378.35	2.31E+01	19.16			2.31E+01	1.92E+01
	40	1433.11	8.00E+00	10.44			8.00E+00	1.04E+01
	41	1460.86	3.55E+02	41.63			3.55E+02	4.16E+01
	42	1508.15	2.17E+01	12.57			2.17E+01	1.26E+01
	43	1589.28	1.70E+01	12.81			1.70E+01	1.28E+01
	44	1728.57	1.80E+01	11.92			1.80E+01	1.19E+01
	45	1764.55	4.01E+01	19.12			4.01E+01	1.91E+01
	46	1846.61	1.10E+01	11.52			1.10E+01	1.15E+01
	47	2119.62	8.17E+00	9.41			8.17E+00	9.41E+00
	48	2204.93	1.75E+01	10.77			1.75E+01	1.08E+01
	49	2447.24	8.00E+00	5.66			8.00E+00	5.66E+00
	50	2614.27	4.70E+01	13.71			4.70E+01	1.37E+01

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

AREA CORRECTION REPORT

REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 4/13/2016 8:02:52AM

Ref. Peak Energy : 0.00

Reference Date :

Peak Ratio : 0.00

Uncertainty : 0.00

Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000035178.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	46.79	2.14E+02	64.89	3.04E+01	2.01E+01	1.83E+02	6.79E+01
	2	62.93	1.60E+02	88.70	3.41E+01	5.13E+00	1.06E+02	8.88E+01
M	3	75.10	3.21E+02	78.76			3.21E+02	7.88E+01
m	4	77.58	5.93E+02	86.62			5.93E+02	8.66E+01
M	5	87.94	1.72E+02	64.43	3.05E+00	2.15E+00	1.69E+02	6.45E+01
m	6	92.92	2.15E+02	65.60	7.72E+01	4.69E+00	1.38E+02	6.58E+01
	7	129.32	5.60E+01	55.44	5.56E+00	6.45E+00	5.04E+01	5.58E+01
	8	186.62	1.75E+02	72.10	3.82E+01	5.87E+00	1.36E+02	7.23E+01
	9	209.13	1.05E+02	66.23			1.05E+02	6.62E+01
M	10	239.02	5.56E+02	60.60	1.06E+01	5.71E+00	5.45E+02	6.09E+01
m	11	242.23	1.89E+02	63.81			1.89E+02	6.38E+01
	12	295.59	2.15E+02	64.12			2.15E+02	6.41E+01
	13	338.65	8.16E+01	48.68			8.16E+01	4.87E+01
	14	352.33	4.78E+02	60.52	0.00E+00	0.00E+00	4.78E+02	6.05E+01
	15	384.73	5.03E+01	61.32			5.03E+01	6.13E+01
	16	410.28	3.24E+01	34.38			3.24E+01	3.44E+01
	17	463.64	3.20E+01	35.04			3.20E+01	3.50E+01
	18	511.69	1.18E+02	45.21	5.95E+01	4.92E+00	5.80E+01	4.55E+01
	19	535.95	2.70E+01	30.45			2.70E+01	3.04E+01
M	20	579.46	1.38E+01	12.30			1.38E+01	1.23E+01
m	21	583.44	1.49E+02	30.28	5.06E+00	2.98E+00	1.44E+02	3.04E+01
M	22	604.72	1.22E+01	16.12			1.22E+01	1.61E+01
m	23	609.63	3.46E+02	41.32	2.01E+00	3.84E+00	3.44E+02	4.15E+01
M	24	651.87	2.14E+01	23.54			2.14E+01	2.35E+01
m	25	657.08	1.85E+01	21.10			1.85E+01	2.11E+01
	26	714.75	6.04E+01	38.04			6.04E+01	3.80E+01
	27	727.73	2.91E+01	24.30			2.91E+01	2.43E+01
	28	769.79	4.13E+01	51.85			4.13E+01	5.18E+01
	29	795.96	2.27E+01	21.63			2.27E+01	2.16E+01
	30	911.20	7.92E+01	30.82	2.99E+00	2.93E+00	7.62E+01	3.10E+01
	31	933.87	3.49E+01	22.89			3.49E+01	2.29E+01
	32	970.18	5.19E+01	33.11			5.19E+01	3.31E+01

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
m	33	1011.24	1.74E+01	12.57			1.74E+01	1.26E+01
M	34	1115.57	1.56E+01	8.49			1.56E+01	8.49E+00
m	35	1120.65	9.01E+01	26.68			9.01E+01	2.67E+01
M	36	1238.10	2.80E+01	22.88			2.80E+01	2.29E+01
m	37	1248.34	1.51E+01	17.76			1.51E+01	1.78E+01
m	38	1255.45	1.76E+01	20.58			1.76E+01	2.06E+01
	39	1378.35	2.31E+01	19.16			2.31E+01	1.92E+01
	40	1433.11	8.00E+00	10.44			8.00E+00	1.04E+01
	41	1460.86	3.55E+02	41.63			3.55E+02	4.16E+01
	42	1508.15	2.17E+01	12.57			2.17E+01	1.26E+01
	43	1589.28	1.70E+01	12.81			1.70E+01	1.28E+01
	44	1728.57	1.80E+01	11.92			1.80E+01	1.19E+01
	45	1764.55	4.01E+01	19.12			4.01E+01	1.91E+01
	46	1846.61	1.10E+01	11.52			1.10E+01	1.15E+01
	47	2119.62	8.17E+00	9.41			8.17E+00	9.41E+00
	48	2204.93	1.75E+01	10.77			1.75E+01	1.08E+01
	49	2447.24	8.00E+00	5.66			8.00E+00	5.66E+00
	50	2614.27	4.70E+01	13.71			4.70E+01	1.37E+01

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	1.000	1460.81	*	10.67	1.69E+01	2.45E+00
ZN-65	1.000	1115.52	*	50.75	1.36E-01	7.50E-02
GA-67	0.424	93.31	*	35.70	9.65E+01	3.68E+02
		203.95	*	2.24	1.69E+03	6.22E+03
		300.22		16.00		
CD-109	0.999	88.03	*	3.72	3.25E+00	1.30E+00
SN-126	0.978	87.57	*	37.00	3.14E-01	1.24E-01
CS-134	0.743	563.23		8.38		
		569.32		15.43		
		604.70	*	97.60	3.11E-02	4.12E-02
		795.84	*	85.40	8.39E-02	8.03E-02
		801.93		8.73		
TL-208	0.869	583.14	*	30.22	1.12E+00	2.57E-01

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
TL-208	0.869	860.37	4.48		
		2614.66 *	35.85	9.82E-01	3.01E-01
PB-210	0.986	46.50 *	4.25	4.78E+00	1.84E+00
BI-212	0.731	727.17 *	11.80	7.03E-01	5.90E-01
		1620.62	2.75		
PB-212	0.873	238.63 *	44.60	1.35E+00	1.83E-01
		300.09	3.41		
BI-214	0.983	609.31 *	46.30	1.82E+00	2.73E-01
		1120.29 *	15.10	2.46E+00	7.54E-01
		1764.49 *	15.80	1.49E+00	7.20E-01
		2204.22 *	4.98	2.39E+00	1.49E+00
PB-214	0.974	295.21 *	19.19	1.47E+00	4.52E-01
		351.92 *	37.19	1.95E+00	2.93E-01
RA-226	0.973	186.21 *	3.28	3.82E+00	7.29E+00
AC-228	0.574	338.32 *	11.40	1.05E+00	6.32E-01
		911.07 *	27.70	9.51E-01	3.93E-01
		969.11	16.60		
TH-234	0.979	63.29 *	3.80	2.18E+00	1.83E+00
AM-243	0.971	74.67 *	66.00	3.45E-01	9.00E-02

* = Energy line found in the spectrum.

- = Manually added nuclide.

? = Manually edited nuclide.

Energy Tolerance : 1.000 keV

Nuclide confidence index threshold = 0.30

Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on: 4/13/2016 8:02:52AM

Peak Locate From Channel: 1

Peak Locate To Channel: 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m 4	77.58	1.64734E-01	7.30	Tol.	TI-44
7	129.32	1.40108E-02	55.33		
m 11	242.23	5.24466E-02	16.90		
15	384.73	1.39850E-02	60.90	Sum	
16	410.28	8.99716E-03	53.07	Tol.	HO-166M
17	463.64	8.88211E-03	54.80		
18	511.69	1.61234E-02	39.18		
19	535.95	7.50000E-03	56.38		
M 20	579.46	3.83071E-03	44.59		
M 24	651.87	5.93315E-03	55.11	Sum	

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m 25	657.08	5.15008E-03	56.89	Sum	
26	714.75	1.67905E-02	31.47		
28	769.79	1.14701E-02	62.78	Sum	
31	933.87	9.68456E-03	32.83		
32	970.18	1.44283E-02	31.87		
m 33	1011.24	4.84625E-03	36.02		
M 36	1238.10	7.78546E-03	40.82		
m 37	1248.34	4.18343E-03	58.97		
m 38	1255.45	4.88650E-03	58.49		
39	1378.35	6.41382E-03	41.50		
40	1433.11	2.22222E-03	65.25		
42	1508.15	6.02881E-03	28.96	Sum	
43	1589.28	4.72222E-03	37.67		
44	1728.57	5.00000E-03	33.10		
46	1846.61	3.05556E-03	52.37		
47	2119.62	2.26852E-03	57.60		
49	2447.24	2.22222E-03	35.36		

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA\1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
K-40	1.00	1460.81 *	10.67	1.69E+01	2.45E+00
ZN-65	1.00	1115.52 *	50.75	1.36E-01	7.50E-02
GA-67	0.42	93.31 *	35.70	9.65E+01	3.68E+02
		208.95 *	2.24	1.69E+03	6.22E+03
		300.22	16.00		
CD-109	0.99	88.03 *	3.72	3.25E+00	1.30E+00
SN-126	0.97	87.57 *	37.00	3.14E-01	1.24E-01
CS-134	0.74	563.23	8.38		
		569.32	15.43		
		604.70 *	97.60	3.11E-02	4.12E-02
		795.84 *	85.40	8.39E-02	8.03E-02

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
CS-134	0.74	801.93	8.73		
TL-208	0.86	583.14 *	30.22	1.12E+00	2.57E-01
		860.37	4.48		
		2614.66 *	35.85	9.82E-01	3.01E-01
PB-210	0.98	46.50 *	4.25	4.78E+00	1.84E+00
BI-212	0.73	727.17 *	11.80	7.03E-01	5.90E-01
		1620.62	2.75		
PB-212	0.87	238.63 *	44.60	1.35E+00	1.83E-01
		300.09	3.41		
BI-214	0.98	609.31 *	46.30	1.82E+00	2.73E-01
		1120.29 *	15.10	2.46E+00	7.54E-01
		1764.49 *	15.80	1.49E+00	7.20E-01
		2204.22 *	4.98	2.39E+00	1.49E+00
PB-214	0.97	295.21 *	19.19	1.47E+00	4.52E-01
		351.92 *	37.19	1.95E+00	2.93E-01
RA-226	0.97	186.21 *	3.28	3.82E+00	7.29E+00
AC-228	0.57	338.32 *	11.40	1.05E+00	6.32E-01
		911.07 *	27.70	9.51E-01	3.93E-01
		969.11	16.60		
TH-234	0.97	63.29 *	3.80	2.18E+00	1.83E+00
AM-243	0.97	74.67 *	66.00	3.45E-01	9.00E-02

* = Energy line found in the spectrum.

- = Manually added nuclide.

? = Manually edited nuclide.

@ = Energy line not used for Weighted Mean Activity

Energy Tolerance : 1.000 keV

Nuclide confidence index threshold = 0.30

Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40	1.000	1.69E+01	2.45E+00	
ZN-65	1.000	1.36E-01	7.50E-02	
GA-67	0.424	1.15E+02	4.33E+02	
? CD-109	0.999	3.25E+00	1.30E+00	
? SN-126	0.978	3.14E-01	1.24E-01	
CS-134	0.748	4.21E-02	3.67E-02	

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
TL-208	0.869	1.06E+00	1.96E-01	
PB-210	0.986	4.78E+00	1.84E+00	
BI-212	0.731	7.03E-01	5.90E-01	
PB-212	0.873	1.35E+00	1.83E-01	
BI-214	0.983	1.86E+00	2.39E-01	
PB-214	0.974	1.81E+00	2.46E-01	
RA-226	0.973	3.82E+00	7.29E+00	
AC-228	0.574	9.79E-01	3.34E-01	
TH-234	0.979	2.18E+00	1.83E+00	
AM-243	0.971	3.45E-01	9.00E-02	

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/13/2016 8:02:52AM
 Peak Locate From Channel : 1
 Peak Locate To Channel : 4096

	Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	4	77.58	1.64734E-01	7.30	Tol.	TI-44
	7	129.32	1.40108E-02	55.33		
m	11	242.23	5.24466E-02	16.90		
	15	384.73	1.39850E-02	60.90	Sum	
	16	410.28	8.99716E-03	53.07	Tol.	HO-166M
	17	463.64	8.88211E-03	54.80		
	18	511.69	1.61234E-02	39.18		
	19	535.95	7.50000E-03	56.38		
M	20	579.46	3.83071E-03	44.59		
M	24	651.87	5.93315E-03	55.11	Sum	
m	25	657.08	5.15008E-03	56.89	Sum	
	26	714.75	1.67905E-02	31.47		
	28	769.79	1.14701E-02	62.78	Sum	
	31	933.87	9.69456E-03	32.83		
	32	970.18	1.44283E-02	31.87		
m	33	1011.24	4.84625E-03	36.02		
M	36	1238.10	7.78546E-03	40.82		
m	37	1248.34	4.18343E-03	58.97		
m	38	1255.45	4.88650E-03	58.49		
	39	1378.35	6.41382E-03	41.50		
	40	1433.11	2.22222E-03	65.25		
	42	1508.15	6.02881E-03	28.96	Sum	
	43	1589.28	4.72222E-03	37.67		
	44	1728.57	5.00000E-03	33.10		
	46	1846.61	3.05556E-03	52.37		
	47	2119.62	2.26852E-03	57.60		
	49	2447.24	2.22222E-03	35.36		

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	10.42	5.18E-02	1.29E+00	1.29E+00
+	NA-22	1274.54	99.94	-8.24E-02	1.32E-01	1.32E-01
+	NA-24	1368.53	99.99	8.91E+11	1.64E+12	2.50E+12
		2754.09	99.86	8.84E+10		1.64E+12
+	AL-26	1808.65	99.76	4.99E-04	7.19E-02	7.19E-02
+	K-40	1460.81	* 10.67	1.69E+01	1.52E+00	1.52E+00
+	@ AR-41	1293.64	99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88	94.40	1.09E-02	8.04E-02	8.04E-02
		78.34	96.00	2.57E-01		1.09E-01
+	SC-46	889.25	99.98	-3.62E-02	1.43E-01	1.43E-01
		1120.51	99.99	3.61E-01		2.65E-01
+	V-48	983.52	99.98	-8.48E-02	3.81E-01	3.81E-01
		1312.10	97.56	2.38E-01		4.84E-01
+	CR-51	320.08	9.83	7.71E-01	1.74E+00	1.74E+00
+	MN-54	834.83	99.97	-7.22E-03	1.23E-01	1.23E-01
+	CO-56	846.75	99.96	1.72E-03	1.15E-01	1.15E-01
		1037.75	14.03	-2.90E-01		9.90E-01
		1238.25	67.00	2.95E-01		3.22E-01
		1771.40	15.51	-8.80E-01		6.83E-01
		2598.48	16.90	2.29E-01		7.39E-01
+	CO-57	122.06	85.51	-9.29E-03	6.66E-02	6.66E-02
		136.48	10.60	3.86E-01		6.06E-01
+	CO-58	810.76	99.40	5.69E-04	1.15E-01	1.15E-01
+	FE-59	1099.22	56.50	-2.85E-03	3.06E-01	3.06E-01
		1291.56	43.20	-1.45E-01		4.35E-01
+	CO-60	1173.22	100.00	9.13E-03	1.31E-01	1.31E-01
		1332.49	100.00	7.85E-02		1.54E-01
+	ZN-65	1115.52	* 50.75	1.36E-01	3.79E-01	3.79E-01
+	GA-67	93.31	* 35.70	9.65E+01	1.53E+02	1.53E+02
		208.95	* 2.24	1.69E+03		1.72E+03
		300.22	16.00	1.05E+02		2.14E+02
+	SE-75	121.11	16.70	-1.92E-01	1.18E-01	3.63E-01
		136.00	59.20	4.54E-02		1.18E-01
		264.65	59.80	-1.33E-01		1.46E-01
		279.53	25.20	-5.80E-02		3.54E-01
		400.65	11.40	-6.68E-01		7.92E-01
+	RB-82	776.52	13.00	3.00E-01	1.72E+00	1.72E+00
+	RB-83	520.41	46.00	1.21E-02	2.20E-01	2.20E-01
		529.64	30.30	-5.89E-02		3.29E-01
		552.65	16.40	2.46E-02		6.67E-01

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	KR-85	513.99	0.43	2.71E+01	2.81E+01	2.81E+01
+	SR-85	513.99	99.27	1.59E-01	1.65E-01	1.65E-01
+	Y-88	898.02	93.40	-2.90E-02	1.09E-01	1.44E-01
		1836.01	99.38	3.29E-02		1.09E-01
+	NB-93M	16.57	9.43	-1.25E+01	9.75E+01	9.75E+01
+	NB-94	702.63	100.00	6.56E-02	8.48E-02	1.07E-01
		871.10	100.00	-7.07E-02		8.48E-02
+	NB-95	765.79	99.81	1.30E-01	2.12E-01	2.12E-01
+	NB-95M	235.69	25.00	3.32E+00	1.01E+02	1.01E+02
+	ZR-95	724.18	43.70	8.85E-02	2.39E-01	3.34E-01
		756.72	55.30	-6.48E-02		2.39E-01
+	MO-99	181.06	6.20	4.45E+02	7.69E+02	1.13E+03
		739.58	12.80	-1.82E+02		7.69E+02
		778.00	4.50	-1.47E+03		2.29E+03
+	RU-103	497.08	89.00	-5.62E-02	1.47E-01	1.47E-01
+	RU-106	621.84	9.50	-3.93E-01	9.24E-01	9.24E-01
+	AG-108M	433.93	89.90	-3.94E-02	9.42E-02	9.42E-02
		614.37	90.40	-6.06E-01		1.16E-01
		722.95	90.50	3.16E-02		1.11E-01
+	CD-109	88.03	*	3.72	4.20E+00	4.20E+00
+	AG-110M	657.75	93.14	-1.33E-01	1.20E-01	1.20E-01
		677.61	10.53	2.10E-01		9.12E-01
		706.67	16.46	-7.89E-02		6.49E-01
		763.93	21.98	4.74E-02		5.25E-01
		884.67	71.63	6.51E-02		1.69E-01
		1384.27	23.94	-4.72E-02		5.07E-01
+	CD-113M	263.70	0.02	-3.07E+01	3.30E+02	3.30E+02
+	SN-113	255.12	1.93	-3.48E-01	1.48E-01	4.86E+00
		391.69	64.90	-1.58E-02		1.48E-01
+	TE123M	159.00	84.10	-1.38E-02	8.85E-02	8.85E-02
+	SB-124	602.71	97.87	-1.98E-02	1.34E-01	1.34E-01
		645.85	7.26	7.30E-02		1.68E+00
		722.78	11.10	3.55E-01		1.25E+00
		1691.02	49.00	1.60E-02		1.92E-01
+	I-125	35.49	6.49	2.70E+00	3.54E+00	3.54E+00
+	SB-125	176.33	6.89	-4.43E-01	2.97E-01	9.22E-01
		427.89	29.33	7.16E-02		2.97E-01
		463.38	10.35	5.19E-01		9.84E-01
		600.56	17.80	1.15E-01		5.63E-01
		635.90	11.32	-9.92E-02		7.82E-01
+	SB-126	414.70	83.30	4.36E-02	4.66E-01	5.09E-01
		666.33	99.60	1.52E-01		5.27E-01
		695.00	99.60	3.62E-01		4.66E-01
		720.50	53.80	-1.18E-01		9.29E-01
+	SN-126	87.57	*	37.00	4.05E-01	4.05E-01
+	SB-127	473.00	25.00	-2.95E+01	3.79E+01	4.91E+01
		685.20	35.70	5.16E+00		3.79E+01
		783.80	14.70	3.87E+01		1.06E+02

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	I-129	29.78	57.00	-1.61E-01	4.92E-01	4.92E-01
		33.60	13.20	2.70E-01		1.45E+00
		39.58	7.52	7.19E-01		1.67E+00
+	I-131	284.30	6.05	4.38E-01	1.10E+00	1.39E+01
		364.48	81.20	-1.40E-01		1.10E+00
		636.97	7.26	4.58E+00		1.36E+01
		722.89	1.80	1.74E+01		6.13E+01
+	TE-132	49.72	13.10	2.79E+01	3.20E+01	2.58E+02
		228.16	88.00	2.73E+00		3.20E+01
+	BA-133	81.00	33.00	-9.57E-01	2.21E-01	2.21E-01
		302.84	17.80	1.24E-01		4.86E-01
		356.01	60.00	1.56E-02		2.21E-01
+	I-133	529.87	86.30	-7.16E+07	4.00E+08	4.00E+08
+	XE-133	81.00	38.00	-3.24E+01	7.49E+00	7.49E+00
+	CS-134	563.23	8.38	-2.51E-01	1.28E-01	1.07E+00
		569.32	15.43	-1.89E-01		5.74E-01
		604.70	* 97.60	3.11E-02		1.75E-01
		795.84	* 85.40	8.39E-02		1.28E-01
		801.93	8.73	7.74E-02		1.09E+00
+	CS-135	268.24	16.00	9.46E-02	5.15E-01	5.15E-01
+	@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41	28.60	1.00E+26		1.00E+26
	@	1678.03	9.54	1.00E+26		1.00E+26
+	CS-136	153.22	7.46	-2.04E-01	4.18E-01	3.66E+00
		163.89	4.61	2.87E-01		5.76E+00
		176.55	13.56	-8.87E-02		2.02E+00
		273.65	12.66	4.51E-01		2.84E+00
		340.57	48.50	-4.40E-02		8.98E-01
		818.50	99.70	5.61E-02		4.18E-01
		1048.07	79.60	-2.95E-01		5.94E-01
		1235.34	19.70	-2.59E+00		3.24E+00
+	CS-137	661.65	85.12	4.11E-03	1.34E-01	1.34E-01
+	LA-138	788.74	34.00	1.47E-01	1.75E-01	3.14E-01
		1435.80	66.00	-3.12E-02		1.75E-01
+	CE-139	165.85	80.35	-1.64E-02	8.81E-02	8.81E-02
+	BA-140	162.64	6.70	-1.89E+00	1.67E+00	4.05E+00
		304.84	4.50	-2.54E+00		7.83E+00
		423.70	3.20	-2.00E+00		1.14E+01
		437.55	2.00	6.85E+00		1.96E+01
		537.32	25.00	7.03E-01		1.67E+00
+	LA-140	328.77	20.50	8.33E-01	4.66E-01	1.97E+00
		487.03	45.50	-2.33E-01		8.69E-01
		815.85	23.50	-8.09E-02		1.75E+00
		1596.49	95.49	-1.71E-02		4.66E-01
+	CE-141	145.44	48.40	5.44E-02	2.36E-01	2.36E-01
+	CE-143	57.36	11.80	-1.77E+05	3.44E+05	7.75E+05
		293.26	42.00	-3.96E+04		3.44E+05
		664.55	5.20	4.18E+05		2.79E+06
+	CE-144	133.54	10.80	-6.03E-02	5.76E-01	5.76E-01

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PM-144	476.78	42.00	-7.30E-02	8.49E-02	2.28E-01
		618.01	98.60	-1.72E-02		8.49E-02
		696.49	99.49	6.82E-03		9.96E-02
+	PM-145	36.85	21.70	-1.23E-01	3.62E-01	6.82E-01
		37.36	39.70	1.34E-02		3.62E-01
		42.30	15.10	-3.21E-02		7.13E-01
		72.40	2.31	-6.14E+00		3.86E+00
+	PM-146	453.90	39.94	1.28E-02	2.21E-01	2.21E-01
		735.90	14.01	2.07E-02		6.35E-01
		747.13	13.10	-2.41E-01		7.54E-01
+	ND-147	91.11	28.90	-1.07E+00	1.60E+00	1.60E+00
		531.02	13.10	1.07E-01		3.63E+00
+	PM-149	285.90	3.10	5.10E+03	1.48E+04	1.48E+04
+	EU-152	121.78	20.50	-3.62E-02	2.59E-01	2.59E-01
		244.69	5.40	3.23E-01		1.86E+00
		344.27	19.13	-4.40E-02		3.95E-01
		778.89	9.20	-2.44E-01		1.02E+00
		964.01	10.40	-9.50E-02		1.11E+00
		1085.78	7.22	7.45E-01		1.64E+00
		1112.02	9.60	-3.79E-01		1.29E+00
		1407.95	14.94	2.53E-01		8.64E-01
+	GD-153	97.43	31.30	-4.66E-03	2.05E-01	2.05E-01
		103.18	22.20	-1.39E-01		2.70E-01
+	EU-154	123.07	40.50	9.00E-03	1.34E-01	1.34E-01
		723.30	19.70	1.46E-01		5.15E-01
		873.19	11.50	4.62E-01		8.82E-01
		996.32	10.30	-6.37E-02		8.75E-01
		1004.76	17.90	-1.02E-01		6.30E-01
		1274.45	35.50	-2.29E-01		3.65E-01
+	EU-155	86.50	30.90	1.96E-01	2.63E-01	2.63E-01
		105.30	20.70	3.55E-02		2.80E-01
+	EU-156	811.77	10.40	-5.63E-01	2.82E+00	2.82E+00
		1153.47	7.20	2.39E+00		6.67E+00
		1230.71	8.90	1.49E+00		5.88E+00
+	HO-166M	184.41	72.60	1.82E-01	1.13E-01	1.13E-01
		280.45	29.60	1.06E-01		2.65E-01
		410.94	11.10	2.58E-01		8.54E-01
		711.69	54.10	1.46E-01		2.18E-01
+	TM-171	66.72	0.14	3.55E+01	5.72E+01	5.72E+01
+	HF-172	81.75	4.52	-6.86E+00	5.22E-01	1.58E+00
		125.81	11.30	1.44E-01		5.22E-01
+	LU-172	181.53	20.60	1.42E+00	3.06E+00	5.41E+00
		810.06	16.63	-2.97E+00		9.34E+00
		912.12	15.25	3.17E+01		2.09E+01
		1093.66	62.50	-7.08E-01		3.06E+00
+	LU-173	100.72	5.24	-1.78E-02	4.27E-01	1.11E+00
		272.11	21.20	4.03E-01		4.27E-01
+	HF-175	343.40	84.00	-6.67E-03	1.20E-01	1.20E-01
+	LU-176	88.34	13.30	3.00E-02	7.68E-02	6.15E-01

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	LU-176	201.83	86.00	-1.94E-03	7.68E-02	8.99E-02
		306.78	94.00	-4.30E-02		7.68E-02
+	TA-182	67.75	41.20	2.96E-02	2.18E-01	2.18E-01
		1121.30	34.90	1.14E+00		7.19E-01
		1189.05	16.23	1.71E-01		8.47E-01
		1221.41	26.98	7.96E-02		5.86E-01
		1231.02	11.44	7.95E-01		1.53E+00
+	IR-192	308.46	29.68	-1.22E-02	2.26E-01	3.13E-01
		468.07	48.10	-2.61E-02		2.26E-01
+	HG-203	279.19	77.30	-3.16E-02	1.51E-01	1.51E-01
+	BI-207	569.67	97.72	3.88E-02	9.42E-02	9.42E-02
		1063.62	74.90	4.30E-02		1.53E-01
+	TL-208	583.14	* 30.22	1.12E+00	5.65E-02	3.79E-01
		860.37	4.48	1.05E+00		2.49E+00
		2614.66	* 35.85	9.82E-01		5.65E-02
+	BI-210M	262.00	45.00	4.45E-02	1.76E-01	1.76E-01
		300.00	23.00	2.00E-01		4.10E-01
+	PB-210	46.50	* 4.25	4.78E+00	2.74E+00	2.74E+00
+	PB-211	404.84	2.90	1.18E+00	2.97E+00	2.97E+00
		831.96	2.90	-3.64E-01		4.07E+00
+	BI-212	727.17	* 11.80	7.03E-01	9.30E-01	9.30E-01
		1620.62	2.75	1.00E+00		4.03E+00
+	PB-212	238.53	* 44.60	1.35E+00	3.11E-01	3.11E-01
		300.00	3.41	1.35E+00		2.76E+00
+	BI-214	609.31	* 46.30	1.82E+00	3.73E-01	3.73E-01
		1120.29	* 15.10	2.46E+00		1.26E+00
		1764.49	* 15.80	1.49E+00		9.77E-01
		2204.22	* 4.98	2.39E+00		1.90E+00
+	PB-214	295.21	* 19.19	1.47E+00	2.92E-01	6.58E-01
		351.92	* 37.19	1.95E+00		2.92E-01
+	RN-219	401.80	6.50	-1.15E-01	1.23E+00	1.23E+00
+	RA-223	323.87	3.88	-4.10E-01	2.21E+00	2.21E+00
+	RA-224	240.98	3.95	1.88E+01	3.94E+00	3.94E+00
+	RA-225	40.00	31.00	6.24E-01	1.45E+00	1.45E+00
+	RA-226	186.21	* 3.28	3.82E+00	3.23E+00	3.23E+00
+	TH-227	50.10	8.40	1.18E-01	1.06E+00	1.09E+00
		236.00	11.50	3.51E-02		1.06E+00
		256.20	6.30	-8.88E-02		1.26E+00
+	AC-228	338.32	* 11.40	1.05E+00	5.59E-01	9.92E-01
		911.07	* 27.70	9.51E-01		5.59E-01
		969.11	16.60	7.67E-01		9.61E-01
+	TH-230	48.44	16.90	9.84E-02	6.58E-01	6.58E-01
		62.85	4.60	2.31E+00		1.86E+00
		67.57	3.37	2.79E+00		2.05E+01
+	PA-231	283.67	1.60	1.51E-01	3.74E+00	4.80E+00
		302.67	2.30	9.51E-01		3.74E+00
+	TH-231	25.64	14.70	-6.23E-01	1.12E+00	3.82E+00
		84.21	6.40	-1.47E+00		1.12E+00

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PA-233	311.98	38.60	-8.05E-02	3.79E-01	3.79E-01
+	PA-234	131.20	20.40	8.89E-02	3.00E-01	3.00E-01
		733.99	8.80	1.96E-01		1.01E+00
		946.00	12.00	-2.97E-02		8.87E-01
+	PA-234M	1001.03	0.92	4.56E+00	1.13E+01	1.13E+01
+	TH-234	63.29	*	3.80	2.98E+00	2.98E+00
+	U-235	143.76	10.50	3.66E-01	5.89E-01	5.89E-01
		163.35	4.70	6.51E-02		1.31E+00
		205.31	4.70	1.59E-01		1.71E+00
+	NP-237	86.50	12.60	4.75E-01	6.38E-01	6.38E-01
+	NP-239	106.10	22.70	1.58E+02	9.00E+02	9.00E+02
		228.18	10.70	2.16E+02		2.53E+03
		277.60	14.10	2.73E+02		1.94E+03
+	AM-241	59.54	35.90	-4.20E-02	2.22E-01	2.22E-01
+	AM-243	74.67	*	66.00	2.01E-01	2.01E-01
+	CM-243	209.75	3.29	1.96E+00	5.56E-01	2.64E+00
		228.14	10.60	6.22E-02		7.28E-01
		277.50	14.00	7.83E-02		5.56E-01

- + = Nuclide identified during the nuclide identification
 * = Energy line found in the spectrum
 > = MDA value not calculated
 @ = Half-life too short to be able to perform the decay correction
 ? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BE-7	477.59	10.42	1.29E+00	1.29E+00	5.18E-02	6.06E-01
NA-22	1274.54	99.94	1.32E-01	1.32E-01	-8.24E-02	5.95E-02
NA-24	1368.53	99.99	2.50E+12	1.64E+12	8.91E+11	1.10E+12
	2754.09	99.86	1.64E+12		8.84E+10	5.82E+11

Analysis Report for 1603102-03

SEDIMENT 2013-03-16A

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
AL-26	1808.65	99.76	7.19E-02	7.19E-02	4.99E-04	2.79E-02
+ K-40	1460.81	* 10.67	1.52E+00	1.52E+00	1.69E+01	6.96E-01
@ AR-41	1293.64	99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
TI-44	67.88	94.40	8.04E-02	8.04E-02	1.09E-02	3.92E-02
	78.34	96.00	1.09E-01		2.57E-01	5.34E-02
SC-46	889.25	99.98	1.43E-01	1.43E-01	-3.62E-02	6.57E-02
	1120.51	99.99	2.65E-01		3.61E-01	1.26E-01
V-48	983.52	99.98	3.81E-01	3.81E-01	-8.48E-02	1.74E-01
	1312.10	97.50	4.84E-01		2.38E-01	2.20E-01
CR-51	320.08	9.83	1.74E+00	1.74E+00	7.71E-01	8.31E-01
MN-54	834.83	99.97	1.23E-01	1.23E-01	-7.22E-03	5.67E-02
CO-56	846.75	99.96	1.15E-01	1.15E-01	1.72E-03	5.19E-02
	1037.75	14.03	9.90E-01		-2.90E-01	4.47E-01
	1238.25	67.00	3.22E-01		2.95E-01	1.49E-01
	1771.40	15.51	6.83E-01		-8.80E-01	2.76E-01
	2598.48	16.90	7.39E-01		2.29E-01	2.93E-01
CO-57	122.06	85.51	6.66E-02	6.66E-02	-9.29E-03	3.20E-02
	136.48	10.60	6.06E-01		3.86E-01	2.92E-01
CO-58	810.76	99.40	1.15E-01	1.15E-01	5.69E-04	5.17E-02
FE-59	1099.22	56.50	3.06E-01	3.06E-01	-2.85E-03	1.38E-01
	1291.56	43.20	4.35E-01		-1.45E-01	1.95E-01
CO-60	1173.22	100.00	1.31E-01	1.31E-01	9.13E-03	5.94E-02
	1332.49	100.00	1.54E-01		7.85E-02	7.04E-02
+ ZN-65	1115.52	* 50.75	3.79E-01	3.79E-01	1.36E-01	1.78E-01
+ GA-67	93.31	* 35.70	1.53E+02	1.53E+02	9.65E+01	7.57E+01
	208.95	* 2.24	1.72E+03		1.69E+03	8.39E+02
	300.22	16.00	2.14E+02		1.05E+02	1.03E+02
SE-75	121.11	16.70	3.63E-01	1.18E-01	-1.92E-01	1.75E-01
	136.00	59.20	1.18E-01		4.54E-02	5.71E-02
	264.65	59.80	1.46E-01		-1.33E-01	7.00E-02
	279.53	25.20	3.54E-01		-5.80E-02	1.69E-01
	400.65	11.40	7.92E-01		-6.68E-01	3.72E-01
RB-82	776.52	13.00	1.72E+00	1.72E+00	3.00E-01	7.93E-01
RB-83	520.41	46.00	2.20E-01	2.20E-01	1.21E-02	1.02E-01
	529.64	30.30	3.29E-01		-5.89E-02	1.52E-01
	552.65	16.40	6.67E-01		2.46E-02	3.10E-01
KR-85	513.99	0.43	2.81E+01	2.81E+01	2.71E+01	1.34E+01
SR-85	513.99	99.27	1.65E-01	1.65E-01	1.59E-01	7.85E-02
Y-88	898.02	93.40	1.44E-01	1.09E-01	-2.90E-02	6.60E-02
	1836.01	99.38	1.09E-01		3.29E-02	4.48E-02
NB-93M	16.57	9.43	9.75E+01	9.75E+01	-1.25E+01	4.73E+01
NB-94	702.62	100.00	1.07E-01	8.48E-02	6.56E-02	4.98E-02
	871.10	100.00	8.48E-02		-7.07E-02	3.79E-02
NB-95	765.78	99.81	2.12E-01	2.12E-01	1.30E-01	9.90E-02
NB-95M	235.69	25.00	1.01E+02	1.01E+02	3.32E+00	4.90E+01
ZR-95	724.18	43.70	3.34E-01	2.39E-01	8.85E-02	1.55E-01
	756.72	55.30	2.39E-01		-6.48E-02	1.10E-01
MO-99	181.06	6.20	1.13E+03	7.69E+02	4.45E+02	5.42E+02
	739.58	12.80	7.69E+02		-1.82E+02	3.52E+02
	778.00	4.50	2.23E+03		-1.47E+03	1.04E+03
RU-103	497.08	89.00	1.47E-01	1.47E-01	-5.62E-02	6.86E-02
RU-106	621.84	9.80	9.24E-01	9.24E-01	-3.93E-01	4.26E-01
AG-108M	433.93	89.90	9.42E-02	9.42E-02	-3.94E-02	4.44E-02

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
AG-108M	614.37	90.40	1.16E-01	9.42E-02	-6.06E-01	5.41E-02
	722.95	90.50	1.11E-01		3.16E-02	5.15E-02
+ CD-109	88.03 *	3.72	4.20E+00	4.20E+00	3.25E+00	2.08E+00
AG-110M	657.75	93.14	1.20E-01	1.20E-01	-1.33E-01	5.59E-02
	677.61	10.53	9.12E-01		2.10E-01	4.19E-01
	706.67	16.46	6.49E-01		-7.89E-02	3.00E-01
	763.93	21.98	5.25E-01		4.74E-02	2.43E-01
	884.67	71.63	1.69E-01		6.51E-02	7.75E-02
	1384.27	23.94	5.07E-01		-4.72E-02	2.23E-01
CD-113M	263.70	0.02	3.30E+02	3.30E+02	-3.07E+01	1.58E+02
SN-113	255.12	1.93	4.86E+00	1.48E-01	-3.48E-01	2.33E+00
	391.69	64.90	1.48E-01		-1.58E-02	7.01E-02
TE123M	159.00	84.10	8.85E-02	8.85E-02	-1.38E-02	4.27E-02
SB-124	602.71	97.87	1.34E-01	1.34E-01	-1.98E-02	6.23E-02
	645.85	7.26	1.68E+00		7.30E-02	7.77E-01
	722.78	11.10	1.25E+00		3.55E-01	5.78E-01
	1691.02	49.00	1.92E-01		1.60E-02	7.44E-02
I-125	35.49	6.49	3.54E+00	3.54E+00	2.70E+00	1.71E+00
SB-125	176.33	6.89	9.22E-01	2.97E-01	-4.43E-01	4.43E-01
	427.89	29.33	2.97E-01		7.16E-02	1.40E-01
	463.38	10.35	9.84E-01		5.19E-01	4.66E-01
	600.56	17.80	5.63E-01		1.15E-01	2.63E-01
	635.90	11.32	7.82E-01		-9.92E-02	3.60E-01
SB-126	414.70	83.30	5.09E-01	4.66E-01	4.36E-02	2.41E-01
	666.33	99.60	5.27E-01		1.52E-01	2.47E-01
	695.00	99.60	4.66E-01		3.62E-01	2.15E-01
	720.50	53.80	9.29E-01		-1.18E-01	4.31E-01
+ SN-126	87.57 *	37.00	4.05E-01	4.05E-01	3.14E-01	2.00E-01
SB-127	473.00	25.00	4.91E+01	3.79E+01	-2.95E+01	2.30E+01
	685.20	35.70	3.79E+01		5.16E+00	1.74E+01
	783.80	14.70	1.06E+02		3.87E+01	4.87E+01
I-129	29.78	57.00	4.92E-01	4.92E-01	-1.61E-01	2.38E-01
	33.60	13.20	1.45E+00		2.70E-01	7.01E-01
	39.58	7.52	1.67E+00		7.19E-01	8.06E-01
I-131	284.30	6.05	1.39E+01	1.10E+00	4.38E-01	6.64E+00
	364.48	81.20	1.10E+00		-1.40E-01	5.20E-01
	636.97	7.26	1.36E+01		4.58E+00	6.29E+00
	722.89	1.80	6.13E+01		1.74E+01	2.83E+01
TE-132	49.72	13.10	2.58E+02	3.20E+01	2.79E+01	1.25E+02
	228.16	88.00	3.20E+01		2.73E+00	1.54E+01
BA-133	81.00	33.00	2.21E-01	2.21E-01	-9.57E-01	1.08E-01
	302.84	17.80	4.86E-01		1.24E-01	2.33E-01
	356.01	60.00	2.21E-01		1.56E-02	1.07E-01
I-133	529.87	86.30	4.00E+08	4.00E+08	-7.16E+07	1.85E+08
XE-133	81.00	38.00	7.49E+00	7.49E+00	-3.24E+01	3.65E+00
+ CS-134	563.23	8.38	1.07E+00	1.28E-01	-2.51E-01	4.99E-01
	569.32	15.43	5.74E-01		-1.89E-01	2.66E-01
	604.70 *	97.60	1.75E-01		3.11E-02	8.43E-02
	795.84 *	85.40	1.28E-01		8.39E-02	5.91E-02
	801.93	8.73	1.09E+00		7.74E-02	4.94E-01
CS-135	268.24	16.00	5.15E-01	5.15E-01	9.46E-02	2.47E-01
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41	28.60	1.00E+26		1.00E+26	1.00E+20

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
@ I-135	1678.03	9.54	1.00E+26	1.00E+26	1.00E+26	1.00E+20
CS-136	153.22	7.46	3.66E+00	4.18E-01	-2.04E-01	1.77E+00
	163.89	4.61	5.76E+00		2.87E-01	2.78E+00
	176.55	13.56	2.02E+00		-8.87E-02	9.72E-01
	273.65	12.56	2.84E+00		4.51E-01	1.36E+00
	340.57	48.50	8.98E-01		-4.40E-02	4.31E-01
	818.50	99.70	4.18E-01		5.61E-02	1.90E-01
	1048.07	79.60	5.94E-01		-2.95E-01	2.69E-01
	1235.34	19.70	3.24E+00		-2.59E+00	1.49E+00
CS-137	661.65	85.12	1.34E-01	1.34E-01	4.11E-03	6.30E-02
LA-138	788.74	34.00	3.14E-01	1.75E-01	1.47E-01	1.45E-01
	1435.80	66.00	1.75E-01		-3.12E-02	7.72E-02
CE-139	165.85	80.35	8.81E-02	8.81E-02	-1.64E-02	4.24E-02
BA-140	162.64	6.70	4.05E+00	1.67E+00	-1.89E+00	1.95E+00
	304.84	4.50	7.83E+00		-2.54E+00	3.74E+00
	423.70	3.20	1.14E+01		-2.00E+00	5.36E+00
	437.55	2.00	1.96E+01		6.85E+00	9.23E+00
	537.32	25.00	1.67E+00		7.03E-01	7.82E-01
LA-140	328.77	20.50	1.97E+00	4.66E-01	8.33E-01	9.41E-01
	487.03	45.50	8.69E-01		-2.33E-01	4.08E-01
	815.85	23.50	1.75E+00		-8.09E-02	7.92E-01
	1596.49	95.49	4.66E-01		-1.71E-02	1.98E-01
CE-141	145.44	48.40	2.36E-01	2.36E-01	5.44E-02	1.14E-01
CE-143	57.36	11.80	7.75E+05	3.44E+05	-1.77E+05	3.76E+05
	293.26	42.00	3.44E+05		-3.96E+04	1.67E+05
	664.55	5.20	2.79E+06		4.18E+05	1.32E+06
CE-144	133.54	10.80	5.76E-01	5.76E-01	-6.03E-02	2.78E-01
PM-144	476.78	42.00	2.28E-01	8.49E-02	-7.30E-02	1.07E-01
	618.01	98.60	8.49E-02		-1.72E-02	3.89E-02
	696.49	99.49	9.96E-02		6.82E-03	4.59E-02
PM-145	36.85	21.70	6.82E-01	3.62E-01	-1.23E-01	3.29E-01
	37.36	39.70	3.62E-01		1.34E-02	1.75E-01
	42.30	15.10	7.13E-01		-3.21E-02	3.45E-01
	72.40	2.31	3.86E+00		-6.14E+00	1.89E+00
PM-146	453.90	39.94	2.21E-01	2.21E-01	1.28E-02	1.04E-01
	735.90	14.01	6.35E-01		2.07E-02	2.89E-01
	747.13	13.10	7.54E-01		-2.41E-01	3.47E-01
ND-147	91.11	28.90	1.60E+00	1.60E+00	-1.07E+00	7.81E-01
	531.02	13.10	3.63E+00		1.07E-01	1.69E+00
PM-149	285.90	3.10	1.48E+04	1.48E+04	5.10E+03	7.08E+03
EU-152	121.78	20.50	2.59E-01	2.59E-01	-3.62E-02	1.25E-01
	244.69	5.40	1.86E+00		3.23E-01	9.01E-01
	344.27	19.13	3.95E-01		-4.40E-02	1.87E-01
	778.89	9.20	1.02E+00		-2.44E-01	4.67E-01
	964.01	10.40	1.11E+00		-9.50E-02	5.09E-01
	1085.78	7.22	1.64E+00		7.45E-01	7.45E-01
	1112.02	9.60	1.29E+00		-3.79E-01	5.88E-01
	1407.95	14.94	8.64E-01		2.53E-01	3.87E-01
GD-153	97.43	31.30	2.05E-01	2.05E-01	-4.66E-03	9.92E-02
	103.18	22.20	2.70E-01		-1.39E-01	1.30E-01
EU-154	123.07	40.50	1.34E-01	1.34E-01	9.00E-03	6.47E-02
	723.30	19.70	5.15E-01		1.46E-01	2.38E-01
	873.19	11.50	8.82E-01		4.62E-01	4.01E-01

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
EU-154	996.32	10.30	8.75E-01	1.34E-01	-6.37E-02	3.88E-01
	1004.76	17.90	6.30E-01		-1.02E-01	2.86E-01
	1274.45	35.50	3.65E-01		-2.29E-01	1.65E-01
EU-155	86.50	30.90	2.63E-01	2.63E-01	1.96E-01	1.28E-01
	105.30	20.70	2.80E-01		3.55E-02	1.35E-01
EU-156	811.77	10.40	2.82E+00	2.82E+00	-5.63E-01	1.27E+00
	1153.47	7.20	6.67E+00		2.39E+00	3.05E+00
	1230.71	8.90	5.88E+00		1.49E+00	2.70E+00
HO-166M	184.4	72.60	1.13E-01	1.13E-01	1.82E-01	5.46E-02
	280.45	29.60	2.65E-01		1.06E-01	1.27E-01
	410.94	11.10	8.54E-01		2.58E-01	4.06E-01
	711.69	54.10	2.18E-01		1.46E-01	1.02E-01
TM-171	66.72	0.14	5.72E+01	5.72E+01	3.55E+01	2.79E+01
HF-172	81.75	4.52	1.58E+00	5.22E-01	-6.86E+00	7.67E-01
	125.81	11.30	5.22E-01		1.44E-01	2.52E-01
LU-172	181.53	20.60	5.41E+00	3.06E+00	1.42E+00	2.60E+00
	810.06	16.63	9.34E+00		-2.97E+00	4.22E+00
	912.12	15.25	2.09E+01		3.17E+01	9.90E+00
	1093.66	62.50	3.06E+00		-7.08E-01	1.38E+00
LU-173	100.72	5.24	1.11E+00	4.27E-01	-1.78E-02	5.38E-01
	272.11	21.20	4.27E-01		4.03E-01	2.06E-01
HF-175	343.40	84.00	1.20E-01	1.20E-01	-6.67E-03	5.70E-02
LU-176	88.34	13.30	6.15E-01	7.68E-02	3.00E-02	3.01E-01
	201.83	86.00	8.99E-02		-1.94E-03	4.34E-02
	306.78	94.00	7.68E-02		-4.30E-02	3.65E-02
TA-182	67.75	41.20	2.18E-01	2.18E-01	2.96E-02	1.06E-01
	1121.30	34.90	7.19E-01		1.14E+00	3.41E-01
	1189.05	16.23	8.47E-01		1.71E-01	3.81E-01
	1221.41	26.98	5.86E-01		7.96E-02	2.67E-01
	1231.02	11.44	1.53E+00		7.95E-01	7.01E-01
IR-192	308.46	29.68	3.13E-01	2.26E-01	-1.22E-02	1.49E-01
	468.07	48.10	2.26E-01		-2.61E-02	1.06E-01
HG-203	279.15	77.30	1.51E-01	1.51E-01	-3.16E-02	7.21E-02
BI-207	569.67	97.72	9.42E-02	9.42E-02	3.88E-02	4.39E-02
	1063.62	74.90	1.53E-01		4.30E-02	6.93E-02
+ TL-208	583.14	*	30.22	5.65E-02	1.12E+00	1.79E-01
	860.37		4.48		1.05E+00	1.15E+00
	2614.66	*	35.85		9.82E-01	0.00E+00
BI-210M	262.00		45.00	1.76E-01	4.45E-02	8.43E-02
	300.00		23.00		2.00E-01	1.97E-01
+ PB-210	46.50	*	4.25	2.74E+00	4.78E+00	1.34E+00
	404.84		2.90	2.97E+00	1.18E+00	1.41E+00
+ PB-211	831.96		2.90		-3.64E-01	1.89E+00
	727.17	*	11.80	9.30E-01	7.03E-01	4.32E-01
+ BI-212	1620.62		2.75		1.00E+00	1.75E+00
	238.63	*	44.60	3.11E-01	1.35E+00	1.52E-01
+ PB-212	300.09		3.41		1.35E+00	1.33E+00
	609.31	*	46.30	3.73E-01	1.82E+00	1.79E-01
+ BI-214	1120.29	*	15.10		2.46E+00	5.95E-01
	1764.49	*	15.80		1.49E+00	4.38E-01
	2204.22	*	4.98		2.39E+00	7.64E-01
+ PB-214	295.21	*	19.19	2.92E-01	1.47E+00	3.20E-01
	351.92	*	37.19		1.95E+00	1.41E-01

Analysis Report for 1603102-03

SEDIMENT 2016-03-16A

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
RN-219	401.80	6.50	1.23E+00	1.23E+00	-1.15E-01	5.80E-01
RA-223	323.87	3.88	2.21E+00	2.21E+00	-4.10E-01	1.06E+00
RA-224	240.98	3.95	3.94E+00	3.94E+00	1.88E+01	1.93E+00
RA-225	40.00	31.00	1.45E+00	1.45E+00	6.24E-01	7.00E-01
+ RA-226	186.21 *	3.28	3.23E+00	3.23E+00	3.82E+00	1.58E+00
TH-227	50.10	8.40	1.09E+00	1.06E+00	1.18E-01	5.28E-01
	236.00	11.50	1.06E+00		3.51E-02	5.19E-01
	256.20	6.30	1.26E+00		-8.88E-02	6.03E-01
+ AC-228	338.32 *	11.40	9.92E-01	5.59E-01	1.05E+00	4.79E-01
	911.07 *	27.70	5.59E-01		9.51E-01	2.62E-01
	969.11	16.60	9.61E-01		7.67E-01	4.51E-01
TH-230	48.44	16.90	6.58E-01	6.58E-01	9.84E-02	3.21E-01
	62.85	4.60	1.86E+00		2.31E+00	9.08E-01
	67.67	0.37	2.05E+01		2.79E+00	1.00E+01
PA-231	283.67	1.60	4.80E+00	3.74E+00	1.51E-01	2.29E+00
	302.67	2.30	3.74E+00		9.51E-01	1.79E+00
TH-231	25.64	14.70	3.82E+00	1.12E+00	-6.23E-01	1.85E+00
	84.21	6.40	1.12E+00		-1.47E+00	5.46E-01
PA-233	311.98	38.60	3.79E-01	3.79E-01	-8.05E-02	1.80E-01
PA-234	131.20	20.40	3.00E-01	3.00E-01	8.89E-02	1.45E-01
	733.99	8.80	1.01E+00		1.96E-01	4.62E-01
	946.00	12.00	8.87E-01		-2.97E-02	4.03E-01
PA-234M	1001.03	0.92	1.13E+01	1.13E+01	4.56E+00	5.10E+00
+ TH-234	63.29 *	3.80	2.98E+00	2.98E+00	2.18E+00	1.46E+00
U-235	143.76	10.50	5.89E-01	5.89E-01	3.66E-01	2.84E-01
	163.35	4.70	1.31E+00		6.51E-02	6.30E-01
	205.31	4.70	1.71E+00		1.59E-01	8.25E-01
NP-237	86.50	12.60	6.38E-01	6.38E-01	4.75E-01	3.12E-01
NP-239	106.30	22.70	9.00E+02	9.00E+02	1.58E+02	4.35E+02
	228.18	10.70	2.53E+03		2.16E+02	1.22E+03
	277.60	14.10	1.94E+03		2.73E+02	9.27E+02
AM-241	59.54	35.90	2.22E-01	2.22E-01	-4.20E-02	1.08E-01
+ AM-243	74.67 *	66.00	2.01E-01	2.01E-01	3.45E-01	9.89E-02
CM-243	209.75	3.29	2.64E+00	5.56E-01	1.96E+00	1.28E+00
	228.14	10.60	7.28E-01		6.22E-02	3.50E-01
	277.60	14.00	5.56E-01		7.83E-02	2.66E-01

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = MDA value not calculated

@ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

Analysis Report for 1603102-03
SEDIMENT 2016-03-16A

DATA REVIEW COMMENTS REPORT

Creation Date

Comment

User

No Data Review Comments Entered.

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: SEDIMENT 2016-03-16A

Elapsed Live time: 3600

Elapsed Real Time: 3612

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	0	0	0	0
9:	3	162	176	118	108	94	62	104
17:	86	66	59	68	68	68	75	60
25:	65	73	66	48	59	47	53	59
33:	53	54	58	56	53	72	41	62
41:	55	58	49	52	67	75	193	116
49:	48	74	64	65	72	76	69	68
57:	63	71	77	83	86	99	105	141
65:	97	75	78	125	98	81	102	96
73:	101	132	246	255	262	414	144	91
81:	77	95	73	101	114	91	122	176
89:	99	114	115	93	181	170	81	83
97:	59	52	64	62	52	56	50	61
105:	55	60	66	57	59	60	55	48
113:	60	41	47	48	59	34	46	42
121:	41	44	43	57	50	56	39	59
129:	73	62	57	51	44	58	51	50
137:	50	54	59	33	41	45	45	56
145:	65	57	46	52	45	66	42	48
153:	49	58	65	56	47	54	62	40
161:	48	34	61	40	37	56	45	46
169:	44	51	35	36	48	43	34	47
177:	53	35	51	57	31	47	32	42
185:	46	99	130	49	37	46	39	36
193:	44	36	31	48	39	36	47	36
201:	29	48	40	34	39	42	43	41
209:	58	69	47	37	32	31	40	45
217:	38	36	36	31	46	32	28	36
225:	33	29	40	36	29	30	27	28
233:	33	31	27	35	33	80	312	184
241:	49	108	100	40	30	23	23	20
249:	22	26	20	34	26	23	33	32
257:	25	26	31	36	24	25	27	23
265:	23	25	23	18	20	45	44	32
273:	24	23	24	24	20	29	17	25
281:	26	20	19	29	18	19	24	21
289:	24	15	17	22	20	19	100	190
297:	40	26	23	31	40	34	22	22
305:	14	13	22	16	16	16	13	20
313:	15	17	17	15	19	32	22	19
321:	14	22	29	23	18	18	31	20
329:	33	20	19	25	24	15	18	17
337:	16	49	72	22	14	15	16	12
345:	14	18	17	16	20	20	46	243
353:	206	31	19	11	16	19	19	18
361:	15	17	16	17	17	17	19	10

369: 13 22 17 14 24 19 15 18

Sample Title: SEDIMENT 2016-03-16A

Channel	13	22	17	14	24	19	15	18
377:	11	11	15	13	15	25	21	14
385:	20	13	19	12	17	13	12	15
393:	13	11	18	22	15	8	13	12
401:	6	13	15	17	15	18	13	14
409:	23	29	15	20	13	11	18	13
417:	17	18	10	16	10	14	13	14
425:	11	10	13	13	14	17	15	13
433:	7	13	16	15	10	15	16	12
441:	9	9	14	15	14	11	12	11
449:	9	10	15	10	16	14	12	10
457:	11	16	12	13	9	16	19	29
465:	15	11	11	10	15	6	8	13
473:	9	14	13	10	12	19	9	10
481:	19	15	13	10	11	16	9	15
489:	9	8	12	12	10	8	6	7
497:	13	8	7	13	6	16	14	12
505:	15	6	15	7	13	33	40	38
513:	17	14	10	16	5	7	9	9
521:	12	8	8	4	10	8	5	7
529:	6	13	6	8	9	9	10	18
537:	14	11	6	5	9	6	8	16
545:	8	7	12	11	11	10	13	7
553:	10	8	6	7	3	11	12	6
561:	8	14	9	10	8	4	7	10
569:	4	12	10	9	12	9	6	14
577:	8	5	13	8	11	15	68	68
585:	16	4	10	4	4	6	5	6
593:	12	8	7	8	8	13	13	8
601:	9	7	5	12	7	14	10	29
609:	129	160	32	6	12	10	3	8
617:	2	13	6	3	5	9	10	8
625:	6	10	10	8	6	3	10	2
633:	6	12	5	4	4	10	5	10
641:	6	7	4	12	5	7	6	5
649:	8	8	14	16	5	6	12	10
657:	15	5	7	4	10	26	16	2
665:	12	13	10	8	11	8	8	10
673:	6	6	8	7	8	5	6	6
681:	3	5	4	6	8	2	13	7
689:	12	2	1	7	3	9	6	6
697:	9	11	2	8	8	7	10	4
705:	8	15	6	2	5	10	8	8
713:	15	15	11	10	7	9	12	12
721:	4	3	9	11	4	7	20	25
729:	6	5	4	6	6	6	3	7
737:	5	2	7	7	3	7	13	3
745:	8	5	8	6	10	4	5	7
753:	9	7	5	7	8	0	10	6
761:	7	7	3	6	10	5	13	16
769:	15	5	5	5	12	11	4	5
777:	5	5	6	7	6	3	8	3
785:	9	10	8	7	4	8	6	5
793:	2	7	14	11	6	6	2	3

801:

2

6

7

7

7

10

2

8

Sample Title:

SEDIMENT 2016-03-16A

Channel	-----	-----	-----	-----	-----	-----	-----	-----
809:	3	3	1	7	6	1	5	1
817:	7	4	8	6	5	3	8	2
825:	7	7	6	8	8	5	16	5
833:	6	6	8	12	6	8	5	5
841:	6	7	4	6	1	5	4	2
849:	9	2	2	4	8	4	4	7
857:	5	4	6	8	13	6	3	1
865:	6	7	5	1	2	3	4	5
873:	4	5	6	8	4	4	5	0
881:	2	7	5	6	9	10	4	8
889:	4	2	8	8	7	8	6	4
897:	7	6	7	5	7	4	9	6
905:	6	3	5	4	7	23	41	22
913:	9	6	5	3	7	4	6	3
921:	4	1	6	4	4	4	0	3
929:	4	1	6	4	8	7	9	4
937:	4	6	3	2	5	5	7	6
945:	2	4	7	6	2	6	4	6
953:	3	6	4	4	11	5	6	3
961:	4	5	5	7	7	7	4	16
969:	22	16	7	6	4	7	5	2
977:	3	6	6	4	6	3	8	4
985:	5	7	4	9	6	7	8	3
993:	2	7	3	1	3	2	3	4
1001:	6	9	2	3	4	2	5	9
1009:	9	3	9	5	1	2	4	4
1017:	5	5	6	3	6	3	4	3
1025:	4	8	7	5	4	5	2	5
1033:	3	4	6	1	5	5	4	4
1041:	5	8	6	3	5	6	2	6
1049:	3	3	5	7	8	2	1	4
1057:	3	5	3	7	2	6	2	8
1065:	3	4	2	4	2	4	1	4
1073:	7	4	4	5	5	8	4	4
1081:	3	2	8	3	6	3	3	6
1089:	4	3	3	2	5	4	5	5
1097:	6	3	5	6	2	2	5	3
1105:	7	4	6	4	1	5	2	7
1113:	6	3	11	5	5	4	16	43
1121:	19	16	6	6	1	6	7	2
1129:	5	2	5	8	10	5	6	11
1137:	5	9	6	4	2	4	5	3
1145:	7	4	5	4	8	10	3	6
1153:	10	4	3	4	3	3	5	2
1161:	4	7	3	2	5	4	4	1
1169:	7	3	1	4	7	6	7	7
1177:	8	3	4	7	4	4	4	1
1185:	3	4	3	4	3	2	7	4
1193:	5	3	4	2	3	3	7	7
1201:	4	4	2	1	7	6	5	6
1209:	5	3	6	12	5	4	6	4
1217:	7	5	6	5	4	6	3	5
1225:	7	8	2	7	7	8	11	7

1233: 1 2 4 2 15 12 17 4

Sample Title: SEDIMENT 2016-03-16A

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1241:	3	5	4	3	5	6	7	9
1249:	2	3	4	2	1	2	10	4
1257:	4	5	3	2	6	4	4	4
1265:	2	11	3	4	6	4	4	3
1273:	4	1	6	3	3	2	3	8
1281:	7	3	1	8	3	2	5	0
1289:	4	2	3	2	3	4	3	2
1297:	8	7	2	1	2	6	4	2
1305:	2	1	3	0	6	6	2	1
1313:	4	5	2	9	3	2	2	1
1321:	3	5	2	1	1	1	2	7
1329:	1	7	4	3	5	2	6	5
1337:	4	3	1	2	5	3	1	2
1345:	1	3	1	3	0	1	1	1
1353:	4	5	1	3	2	2	3	4
1361:	2	0	2	2	2	3	2	2
1369:	2	2	1	2	0	3	1	6
1377:	7	7	1	4	4	2	2	0
1385:	2	2	1	2	1	5	2	2
1393:	2	2	2	1	2	3	3	2
1401:	1	5	0	1	4	2	5	4
1409:	0	3	2	3	2	1	2	4
1417:	4	2	1	4	1	1	3	3
1425:	2	3	0	2	0	1	2	5
1433:	3	4	0	2	0	0	3	2
1441:	3	0	4	3	1	1	3	0
1449:	1	3	0	1	1	2	4	3
1457:	3	6	45	118	134	42	6	3
1465:	2	3	0	1	2	0	1	1
1473:	0	0	0	2	1	2	4	1
1481:	3	0	3	2	3	3	2	1
1489:	0	0	2	1	2	0	0	2
1497:	1	0	1	1	2	0	2	1
1505:	2	3	4	7	5	3	0	0
1513:	2	0	0	0	0	0	2	2
1521:	2	1	4	0	0	1	2	0
1529:	1	3	2	2	1	0	1	2
1537:	3	1	3	1	1	1	3	1
1545:	0	3	1	2	4	1	0	1
1553:	2	1	3	0	0	0	3	1
1561:	0	0	0	0	2	1	2	2
1569:	1	2	1	3	0	0	1	0
1577:	2	0	3	0	2	0	1	0
1585:	0	3	6	2	4	2	1	2
1593:	1	2	0	1	2	2	0	1
1601:	1	2	2	1	0	4	1	2
1609:	1	1	2	1	0	1	1	2
1617:	1	1	0	4	2	2	2	0
1625:	2	0	0	1	1	0	1	1
1633:	0	0	0	0	1	1	2	1
1641:	0	0	0	0	1	0	2	0
1649:	0	0	0	1	1	1	0	1
1657:	0	1	1	2	2	2	1	0

1665: 2 1 2 2 3 0 0 1

Sample Title: SEDIMENT 2016-03-16A

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1673:	3	1	0	0	1	0	0	3
1681:	1	1	0	0	1	0	0	0
1689:	0	2	1	0	0	0	1	0
1697:	0	1	2	0	0	1	0	0
1705:	0	1	1	0	1	1	1	2
1713:	0	1	1	0	1	1	1	0
1721:	0	1	0	2	1	2	3	6
1729:	2	6	1	0	1	1	0	0
1737:	0	3	2	0	1	0	0	0
1745:	1	0	0	0	0	1	1	1
1753:	0	1	0	1	1	2	3	1
1761:	1	2	16	15	15	3	0	2
1769:	1	0	0	1	2	0	0	3
1777:	0	2	2	2	0	0	0	0
1785:	1	0	2	1	0	2	0	0
1793:	0	1	0	1	0	0	1	0
1801:	0	0	2	1	0	2	0	0
1809:	0	0	1	0	1	0	0	2
1817:	1	2	1	0	2	0	1	1
1825:	0	2	0	0	0	2	2	0
1833:	0	0	1	3	0	1	0	0
1841:	0	0	1	3	3	0	5	5
1849:	1	0	3	0	1	2	0	0
1857:	0	0	0	0	0	0	3	0
1865:	1	0	0	0	0	0	0	1
1873:	1	1	2	2	0	2	0	2
1881:	1	1	0	0	0	0	1	0
1889:	1	1	0	1	1	3	1	2
1897:	0	0	0	1	1	1	1	1
1905:	2	2	2	0	1	2	0	1
1913:	1	1	1	0	0	0	0	1
1921:	2	1	2	0	0	2	0	1
1929:	0	1	2	0	0	0	1	1
1937:	0	0	0	3	0	1	0	2
1945:	1	0	1	0	0	1	1	1
1953:	2	1	1	0	1	1	1	0
1961:	0	1	3	0	0	0	2	1
1969:	2	0	0	0	0	2	1	0
1977:	0	0	0	1	0	2	1	2
1985:	0	0	0	1	0	1	0	2
1993:	0	1	1	1	1	1	1	1
2001:	0	2	2	1	1	1	0	0
2009:	0	1	0	0	0	2	0	0
2017:	0	2	1	2	0	2	0	1
2025:	0	1	2	1	0	1	0	0
2033:	0	0	1	0	0	0	2	0
2041:	0	2	1	1	1	0	1	0
2049:	0	1	2	1	0	0	3	2
2057:	0	0	1	2	1	0	0	1
2065:	0	0	0	0	1	0	0	0
2073:	2	0	0	0	0	0	0	0
2081:	2	2	0	1	1	0	1	2
2089:	1	2	0	1	0	1	0	0

2097: 0 1 1 0 0 2 0 1

Sample Title: SEDIMENT 2016-03-16A

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2105:	0	0	2	0	2	0	2	1
2113:	0	2	0	0	3	2	4	1
2121:	1	1	0	0	1	1	1	1
2129:	0	1	0	0	0	0	0	0
2137:	0	0	1	0	1	1	2	0
2145:	1	2	0	0	1	0	0	1
2153:	1	3	0	1	2	0	1	1
2161:	0	0	1	0	1	0	0	0
2169:	0	1	0	0	1	0	0	0
2177:	0	1	0	0	0	0	1	0
2185:	2	0	0	0	0	2	4	0
2193:	0	0	1	0	1	1	0	1
2201:	1	3	6	1	2	3	1	1
2209:	1	0	0	1	1	0	1	0
2217:	1	0	1	0	1	2	0	0
2225:	1	0	1	0	0	0	1	1
2233:	1	3	2	0	1	0	1	2
2241:	0	0	1	0	1	1	0	1
2249:	0	1	0	0	1	0	0	1
2257:	1	0	0	1	1	0	0	0
2265:	0	2	1	1	1	0	0	0
2273:	1	0	0	2	0	1	0	0
2281:	1	1	0	0	0	0	2	0
2289:	0	1	1	0	2	0	1	1
2297:	1	0	0	1	1	0	0	4
2305:	0	1	1	0	1	1	3	1
2313:	1	0	0	2	1	1	1	1
2321:	0	0	0	0	0	1	0	0
2329:	3	1	1	0	0	0	1	0
2337:	0	0	0	2	0	3	0	1
2345:	2	1	1	1	2	1	1	0
2353:	0	1	0	1	0	0	0	0
2361:	0	1	0	1	0	0	0	0
2369:	0	0	0	0	0	0	0	1
2377:	1	1	0	1	1	2	0	0
2385:	1	0	0	0	0	0	0	1
2393:	0	0	0	0	1	1	1	0
2401:	0	0	0	0	0	0	2	0
2409:	0	1	0	1	0	1	0	0
2417:	2	0	0	2	1	1	0	0
2425:	1	0	0	0	1	0	1	0
2433:	0	1	1	0	0	0	0	0
2441:	2	0	0	0	1	4	1	2
2449:	0	0	0	0	0	0	0	0
2457:	1	0	1	0	0	0	0	0
2465:	0	0	1	0	0	1	1	0
2473:	0	0	0	0	1	0	0	0
2481:	0	2	1	0	0	0	0	1
2489:	0	0	0	0	1	0	0	0
2497:	1	0	0	0	0	0	0	1
2505:	1	1	1	2	0	0	2	0
2513:	0	0	0	0	0	2	1	0
2521:	1	0	0	1	0	0	1	0

2529: 1 0 0 0 0 0 0 0

Sample Title: SEDIMENT 2016-03-16A

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2537:	0	1	0	0	0	0	0	0
2545:	0	0	0	0	0	0	0	0
2553:	0	0	0	0	1	1	0	1
2561:	0	0	0	0	1	0	0	0
2569:	0	0	0	0	0	0	0	0
2577:	1	0	0	1	1	1	0	0
2585:	0	0	0	0	1	0	1	0
2593:	0	1	1	0	0	2	1	0
2601:	0	0	0	0	0	0	1	0
2609:	0	0	2	7	17	11	7	3
2617:	0	0	0	1	0	0	0	0
2625:	0	0	1	0	0	0	1	0
2633:	0	1	0	0	0	0	0	1
2641:	0	0	0	0	0	0	0	0
2649:	0	0	1	0	1	1	0	2
2657:	0	0	0	0	0	0	1	0
2665:	0	0	0	1	0	0	0	0
2673:	0	0	0	0	2	1	0	0
2681:	0	1	0	0	0	1	1	0
2689:	1	0	0	0	0	1	0	1
2697:	1	1	1	0	0	1	0	0
2705:	0	1	0	0	0	0	0	0
2713:	0	0	0	0	0	0	0	1
2721:	0	0	0	1	0	0	0	0
2729:	0	0	0	0	0	0	0	0
2737:	1	0	0	0	0	0	0	1
2745:	0	0	0	0	0	0	0	0
2753:	1	1	0	0	0	0	1	0
2761:	0	0	0	1	1	0	1	1
2769:	0	0	0	0	0	0	0	0
2777:	0	0	0	0	1	0	0	0
2785:	0	0	0	0	0	1	0	0
2793:	0	0	0	0	0	1	0	0
2801:	0	1	0	0	0	0	0	0
2809:	0	0	0	0	0	0	0	0
2817:	0	0	0	0	0	0	0	0
2825:	1	0	0	0	1	1	0	0
2833:	0	0	0	0	1	0	2	0
2841:	0	0	0	0	0	1	0	1
2849:	0	0	0	0	0	1	0	1
2857:	0	0	1	0	1	0	0	0
2865:	0	0	0	1	0	0	0	0
2873:	2	0	0	0	0	0	0	0
2881:	1	0	0	1	1	1	0	0
2889:	0	0	0	0	0	0	1	0
2897:	0	0	0	0	1	0	0	0
2905:	1	0	0	0	0	0	1	0
2913:	1	1	0	0	0	0	0	0
2921:	0	0	0	0	0	0	0	0
2929:	0	0	1	1	0	0	0	0
2937:	0	0	0	0	0	0	0	0
2945:	0	1	0	0	1	2	1	0
2953:	1	0	0	0	0	0	0	0

2961: 0 1 0 0 0 0 0 0

Sample Title: SEDIMENT 2016-03-16A

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2969:	1	0	0	0	0	0	1	1
2977:	0	1	0	0	0	0	0	0
2985:	0	0	0	0	0	0	0	0
2993:	1	0	0	0	0	0	0	1
3001:	0	0	0	0	0	0	0	0
3009:	0	0	0	2	0	0	0	0
3017:	0	0	0	0	0	0	0	0
3025:	0	0	0	0	0	2	1	0
3033:	0	0	1	0	0	0	0	0
3041:	0	0	0	0	0	0	0	1
3049:	0	0	0	1	0	0	0	1
3057:	1	0	0	0	0	0	0	0
3065:	0	0	1	0	0	0	0	0
3073:	0	0	0	1	0	0	0	0
3081:	0	1	0	0	0	0	0	0
3089:	0	0	0	0	0	0	1	0
3097:	0	0	0	1	1	0	0	0
3105:	0	0	0	0	1	0	0	0
3113:	0	0	0	0	0	0	0	0
3121:	1	0	0	1	0	1	0	0
3129:	0	0	0	0	0	0	0	0
3137:	0	0	0	0	0	0	0	0
3145:	0	0	1	0	0	0	0	1
3153:	0	0	0	1	0	0	0	0
3161:	0	0	0	0	0	0	0	0
3169:	0	0	0	0	0	0	0	3
3177:	0	0	0	1	0	0	0	0
3185:	0	1	1	1	0	0	0	0
3193:	1	0	1	0	1	0	0	0
3201:	0	1	0	0	0	0	1	0
3209:	0	0	0	0	0	0	0	0
3217:	0	0	0	0	0	0	0	0
3225:	0	0	0	0	0	0	0	0
3233:	0	0	0	0	0	0	0	0
3241:	0	0	0	1	0	0	0	0
3249:	0	1	0	0	0	0	0	0
3257:	0	0	0	0	0	0	0	0
3265:	0	0	0	0	1	0	0	0
3273:	0	0	0	0	0	0	1	0
3281:	1	0	0	0	0	0	1	0
3289:	0	0	0	0	0	0	0	0
3297:	0	1	0	0	0	0	0	0
3305:	0	0	0	0	0	0	0	0
3313:	0	0	0	0	0	0	1	0
3321:	0	0	0	0	0	0	0	0
3329:	0	0	0	0	0	0	0	0
3337:	0	0	0	0	0	0	0	0
3345:	0	0	3	0	0	0	0	0
3353:	0	0	1	1	0	0	0	0
3361:	0	0	0	0	0	0	0	0
3369:	0	0	0	0	0	0	0	0
3377:	0	0	0	0	0	0	0	0
3385:	0	0	0	0	0	0	0	0

3393: 1 0 0 0 0 0 0 0

Sample Title: SEDIMENT 2016-03-16A

Channel								
3401:	0	0	0	0	0	0	0	0
3409:	1	0	0	0	0	0	0	0
3417:	0	0	0	0	0	1	0	0
3425:	0	0	0	0	0	0	2	1
3433:	1	0	0	1	0	0	0	0
3441:	0	0	0	0	1	0	0	0
3449:	0	0	1	0	0	0	0	0
3457:	1	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	1	0	0	0
3489:	1	0	0	0	0	1	1	0
3497:	0	0	0	0	0	0	0	0
3505:	0	1	0	0	1	0	0	0
3513:	0	0	0	0	0	0	0	0
3521:	0	1	0	0	0	1	0	0
3529:	0	0	0	0	0	1	0	0
3537:	0	0	0	1	0	0	0	0
3545:	0	0	0	1	0	0	1	1
3553:	0	0	0	1	0	0	0	0
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	0	0	0	0	1
3577:	0	0	0	0	0	0	0	0
3585:	0	0	1	0	0	0	0	0
3593:	0	0	0	0	0	0	1	0
3601:	1	0	0	0	0	0	0	0
3609:	0	0	0	0	0	0	0	0
3617:	0	0	0	0	0	0	1	0
3625:	0	0	0	0	0	0	0	0
3633:	0	1	0	0	1	0	1	1
3641:	0	0	0	0	0	0	0	0
3649:	0	0	0	2	0	0	0	0
3657:	0	0	0	0	0	0	0	0
3665:	0	0	0	0	0	0	0	0
3673:	0	0	0	0	0	0	0	0
3681:	0	1	0	1	0	0	0	0
3689:	0	0	0	0	1	0	1	0
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	0	1	0	0	0
3713:	0	0	0	0	0	0	0	0
3721:	0	1	0	0	0	0	0	1
3729:	0	0	1	0	0	0	0	1
3737:	0	0	0	0	0	0	0	0
3745:	0	0	0	0	0	0	0	1
3753:	0	0	0	0	0	0	0	0
3761:	0	0	0	0	1	0	0	0
3769:	0	0	0	0	0	0	0	0
3777:	0	0	0	1	0	0	0	0
3785:	0	0	0	0	0	0	0	0
3793:	0	0	0	0	0	0	0	0
3801:	0	0	0	1	0	0	0	0
3809:	0	0	0	0	0	0	0	0
3817:	0	0	0	1	0	0	0	1

3825:

00000000

1

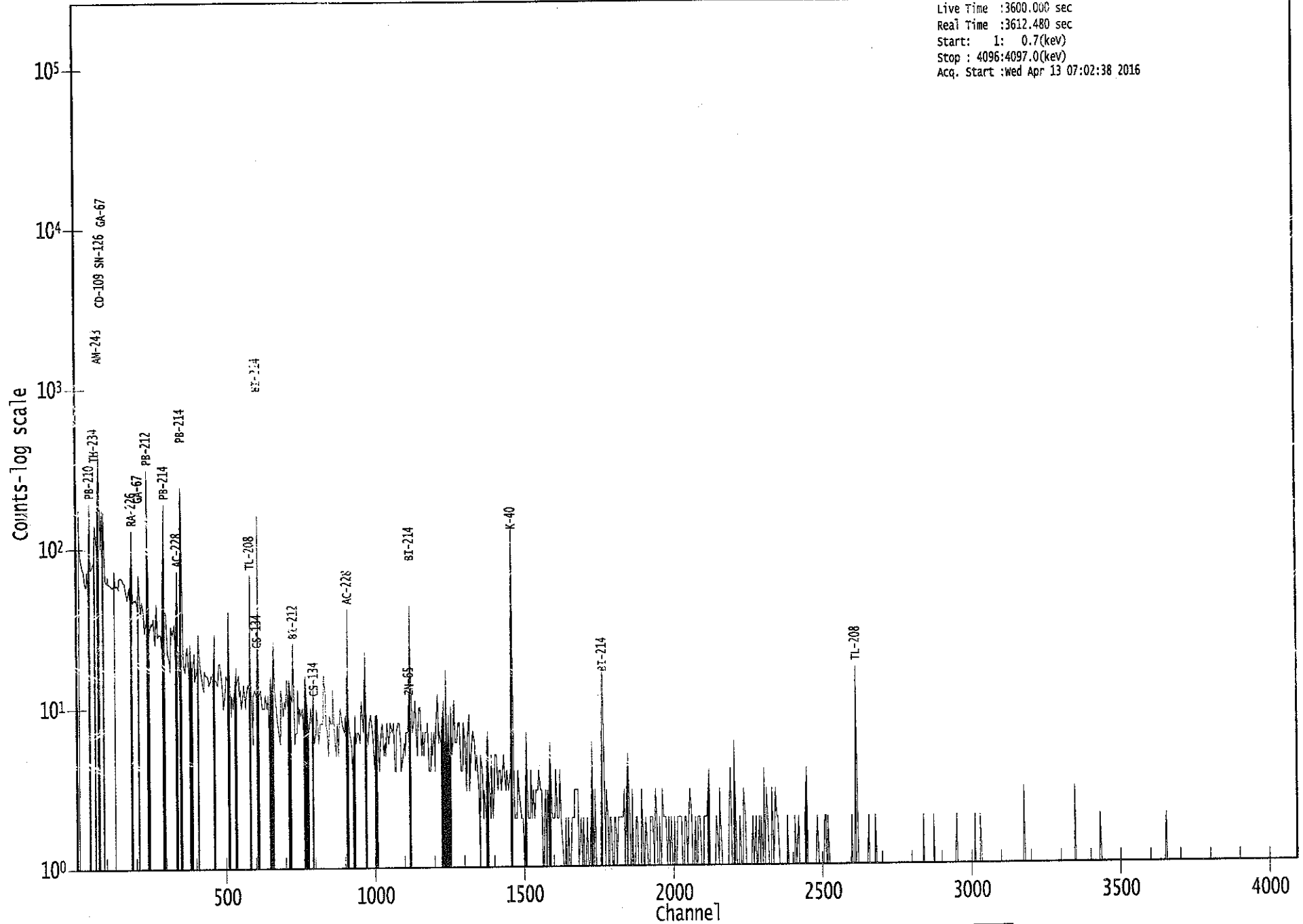
Sample Title:

SEDIMENT 2016-03-16A

Channel	-----	-----	-----	-----	-----	-----	-----	-----
3833:	0	0	0	0	0	0	0	0
3841:	0	0	0	0	0	0	0	0
3849:	0	0	0	0	0	0	0	0
3857:	0	0	0	0	0	0	1	0
3865:	1	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	0	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	0	1	0	0	0	1	0	0
3913:	0	0	0	0	1	0	0	0
3921:	0	0	0	0	0	0	0	0
3929:	0	0	0	0	1	0	0	0
3937:	0	0	0	0	0	0	0	0
3945:	0	0	0	0	1	0	0	0
3953:	0	0	0	0	0	0	0	0
3961:	0	0	0	0	0	1	0	0
3969:	0	0	0	0	0	0	0	0
3977:	0	0	0	0	1	0	0	0
3985:	1	0	0	0	0	0	0	1
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	1	0	0	0	0	0	0	0
4017:	0	0	0	1	0	0	0	0
4025:	0	0	0	0	0	0	0	0
4033:	0	1	0	0	0	0	0	1
4041:	0	0	0	0	0	0	0	0
4049:	1	0	0	0	0	0	0	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	0	1	0	0	1	0
4073:	0	0	0	0	0	0	0	0
4081:	0	0	0	0	0	0	0	0
4089:	0	2	0	0	0	0	0	0

0000035692.CNF

Live Time : 3600.000 sec
 Real Time : 3612.480 sec
 Start: 1: 0.7(keV)
 Stop : 4096:4097.0(keV)
 Acq. Start : Wed Apr 13 07:02:38 2016



ROI Type: 1

ROI Type: 2

102200:

Analysis Report for 1603102-04
SEDIMENT 2016-03-16A

✓
4/13

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1603102-04
Sample Description	: SEDIMENT 2016-03-16A
Sample Type	: SOIL
Sample Size	: 4.476E+02 grams
Facility	: Countroom
Sample Taken On	: 3/16/2016 1:44:57PM
Acquisition Started	: 4/13/2016 8:07:36AM
Procedure	: GAS-1402 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-1402
Live Time	: 3600.0 seconds
Real Time	: 3613.2 seconds
Dead Time	: 0.37 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 10/25/2014
Efficiency Calibration Used Done On	: 10/25/2014
Efficiency Calibration Description	:
Sample Number	: 35696

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
4/13/16

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

PEAK LOCATE REPORT

Peak Locate Performed on : 4/13/2016 9:07:51AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	47.02	47.25	0.0000	0.00
2	75.10	75.32	0.0000	0.00
3	77.47	77.68	0.0000	0.00
4	87.66	87.87	0.0000	0.00
5	93.30	93.50	0.0000	0.00
6	186.07	186.23	0.0000	0.00
7	238.98	239.11	0.0000	0.00
8	242.05	242.17	0.0000	0.00
9	270.01	270.12	0.0000	0.00
10	295.63	295.73	0.0000	0.00
11	300.54	300.63	0.0000	0.00
12	328.05	328.13	0.0000	0.00
13	338.79	338.86	0.0000	0.00
14	352.19	352.26	0.0000	0.00
15	431.61	431.64	0.0000	0.00
16	463.75	463.76	0.0000	0.00
17	477.89	477.89	0.0000	0.00
18	510.45	510.44	0.0000	0.00
19	527.51	527.49	0.0000	0.00
20	569.83	569.79	0.0000	0.00
21	583.52	583.47	0.0000	0.00
22	609.68	609.62	0.0000	0.00
23	624.70	624.63	0.0000	0.00
24	694.73	694.63	0.0000	0.00
25	767.97	767.84	0.0000	0.00
26	794.68	794.54	0.0000	0.00
27	893.26	893.07	0.0000	0.00
28	911.76	911.57	0.0000	0.00
29	933.29	933.09	0.0000	0.00
30	969.54	969.32	0.0000	0.00
31	1106.48	1106.20	0.0000	0.00
32	1120.54	1120.26	0.0000	0.00
33	1154.56	1154.26	0.0000	0.00
34	1162.69	1162.39	0.0000	0.00
35	1238.89	1238.55	0.0000	0.00
36	1460.80	1460.38	0.0000	0.00
37	1482.77	1482.34	0.0000	0.00
38	1629.78	1629.30	0.0000	0.00
39	1658.56	1658.06	0.0000	0.00
40	1728.59	1728.07	0.0000	0.00
41	1764.33	1763.80	0.0000	0.00
42	1841.07	1840.51	0.0000	0.00

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1847.27	1846.71	0.0000	0.00
44	1959.35	1958.76	0.0000	0.00
45	2039.87	2039.25	0.0000	0.00
46	2293.63	2292.93	0.0000	0.00
47	2614.12	2613.34	0.0000	0.00

? = Adjacent peak noted

Errors quoted at 2.000sigma

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/13/2016 9:07:51AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
M m	1	47.02	43 -	50	47.25	1.59E+02	81.02	9.89E+02	1.71
	2	75.10	72 -	81	75.32	3.83E+02	79.57	9.00E+02	1.83
	3	77.47	72 -	81	77.68	6.13E+02	87.66	8.57E+02	1.83
	4	87.66	86 -	90	87.87	6.22E+01	70.86	1.07E+03	1.10
	5	93.30	91 -	99	93.50	1.75E+02	101.45	1.37E+03	1.86
M m	6	186.07	183 -	190	186.23	1.52E+02	68.53	6.84E+02	1.98
	7	238.98	234 -	248	239.11	5.03E+02	61.64	3.24E+02	1.89
	8	242.05	234 -	248	242.17	1.75E+02	64.65	3.24E+02	1.89
	9	270.01	266 -	274	270.12	6.40E+01	55.90	4.42E+02	5.57
	10	295.63	292 -	299	295.73	2.76E+02	59.03	3.98E+02	1.86
	11	300.54	299 -	304	300.63	3.88E+01	36.28	2.38E+02	1.84
	12	328.05	325 -	332	328.13	4.71E+01	40.20	2.42E+02	3.97
	13	338.79	336 -	342	338.86	8.56E+01	40.76	2.43E+02	1.57
	14	352.19	347 -	357	352.26	4.52E+02	64.50	3.13E+02	1.97
	15	431.61	428 -	435	431.64	3.27E+01	30.33	1.31E+02	2.24
	16	463.75	458 -	469	463.76	4.42E+01	45.61	2.32E+02	2.00
	17	477.89	475 -	483	477.89	3.53E+01	35.29	1.67E+02	3.07
	18	510.45	505 -	514	510.44	1.14E+02	38.33	1.45E+02	2.11
	19	527.51	521 -	531	527.49	3.06E+01	37.79	1.69E+02	5.63
	20	569.83	567 -	574	569.79	4.15E+01	25.53	8.30E+01	2.58
	21	583.52	580 -	588	583.47	1.19E+02	39.51	1.67E+02	1.89
	22	609.68	606 -	612	609.62	3.14E+02	43.50	1.16E+02	2.14
	23	624.70	622 -	628	624.63	2.06E+01	19.90	5.89E+01	4.18
	24	694.73	691 -	698	694.63	2.17E+01	27.13	1.09E+02	1.68
	25	767.97	763 -	771	767.84	2.46E+01	29.30	1.17E+02	1.72
	26	794.68	791 -	799	794.54	2.34E+01	26.63	9.51E+01	1.83
	27	893.26	887 -	901	893.07	3.08E+01	27.61	6.63E+01	9.93
	28	911.76	907 -	918	911.57	1.23E+02	33.94	7.82E+01	2.20
	29	933.29	929 -	937	933.09	2.36E+01	23.75	7.29E+01	2.47
	30	969.54	965 -	972	969.32	5.43E+01	28.14	9.54E+01	1.33
	31	1106.48	1100 -	1112	1106.20	3.01E+01	25.89	6.39E+01	7.94
	32	1120.54	1115 -	1125	1120.26	6.95E+01	28.45	6.90E+01	2.06
	33	1154.56	1148 -	1159	1154.26	2.36E+01	27.64	8.28E+01	1.97
	34	1162.69	1160 -	1166	1162.39	1.38E+01	18.10	5.05E+01	1.23
	35	1238.89	1234 -	1242	1238.55	2.67E+01	21.98	5.66E+01	2.25
	36	1460.80	1455 -	1465	1460.38	3.33E+02	38.14	1.63E+01	2.14
	37	1482.77	1479 -	1486	1482.34	1.01E+01	11.49	1.39E+01	1.34
	38	1629.78	1625 -	1632	1629.30	8.42E+00	8.94	7.17E+00	2.47
	39	1658.56	1653 -	1661	1658.06	9.53E+00	8.26	4.75E+00	1.92
	40	1728.59	1724 -	1733	1728.07	1.96E+01	12.25	1.08E+01	3.71

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	1764.33	1759 -	1767	1763.80	4.90E+01	14.00	0.00E+00	2.54
42	1841.07	1837 -	1843	1840.51	5.13E+00	7.52	5.75E+00	1.88
43	1847.27	1844 -	1849	1846.71	7.00E+00	5.29	0.00E+00	2.15
44	1959.35	1954 -	1964	1958.76	1.50E+01	10.11	6.00E+00	5.93
45	2039.87	2036 -	2042	2039.25	6.19E+00	6.65	3.63E+00	2.90
46	2293.63	2290 -	2295	2292.93	4.50E+00	5.74	3.00E+00	2.70
47	2614.12	2607 -	2617	2613.34	4.70E+01	13.71	0.00E+00	2.81

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/13/2016 9:07:51AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	47.02	43 -	50	1.59E+02	81.02	9.89E+02	6.33E+01
M	2	75.10	72 -	81	3.83E+02	79.57	9.00E+02	4.93E+01
m	3	77.47	72 -	81	6.13E+02	87.66	8.57E+02	4.81E+01
	4	87.66	86 -	90	6.22E+01	70.86	1.07E+03	5.68E+01
	5	93.30	91 -	99	1.75E+02	101.45	1.37E+03	8.05E+01
	6	186.07	183 -	190	1.52E+02	68.53	6.84E+02	5.26E+01
M	7	238.98	234 -	248	5.03E+02	61.64	3.24E+02	2.96E+01
m	8	242.05	234 -	248	1.75E+02	64.65	3.24E+02	2.96E+01
	9	270.01	266 -	274	6.40E+01	55.90	4.42E+02	4.40E+01
	10	295.63	292 -	299	2.76E+02	59.03	3.98E+02	4.01E+01
	11	300.54	299 -	304	3.88E+01	36.28	2.38E+02	2.80E+01
	12	328.05	325 -	332	4.71E+01	40.20	2.42E+02	3.11E+01
	13	338.79	336 -	342	8.56E+01	40.76	2.43E+02	2.98E+01
	14	352.19	347 -	357	4.52E+02	64.50	3.13E+02	3.99E+01
	15	431.61	428 -	435	3.27E+01	30.32	1.31E+02	2.31E+01
	16	463.75	458 -	469	4.42E+01	45.61	2.32E+02	3.59E+01
	17	477.89	475 -	483	3.55E+01	35.29	1.67E+02	2.73E+01
	18	510.45	505 -	514	1.14E+02	38.33	1.45E+02	2.62E+01
	19	527.51	521 -	531	3.06E+01	37.79	1.69E+02	2.97E+01
	20	569.83	567 -	574	4.15E+01	25.53	8.30E+01	1.81E+01

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
21	583.52	580 -	588	1.19E+02	39.51	1.67E+02	2.71E+01
22	609.68	606 -	612	3.14E+02	43.50	1.16E+02	2.07E+01
23	624.70	622 -	628	2.06E+01	19.90	5.89E+01	1.46E+01
24	694.73	691 -	698	2.17E+01	27.13	1.09E+02	2.09E+01
25	767.97	763 -	771	2.46E+01	29.30	1.17E+02	2.27E+01
26	794.68	791 -	799	2.34E+01	26.63	9.51E+01	2.04E+01
27	893.26	887 -	901	3.08E+01	27.61	6.63E+01	2.08E+01
28	911.76	907 -	918	1.23E+02	33.94	7.82E+01	2.11E+01
29	933.29	929 -	937	2.36E+01	23.75	7.29E+01	1.78E+01
30	969.54	965 -	972	5.43E+01	28.14	9.54E+01	1.97E+01
31	1106.48	1100 -	1112	3.01E+01	25.89	6.39E+01	1.93E+01
32	1120.54	1115 -	1125	6.95E+01	28.45	6.90E+01	1.89E+01
33	1154.56	1148 -	1159	2.36E+01	27.64	8.28E+01	2.13E+01
34	1162.69	1160 -	1166	1.38E+01	18.10	5.05E+01	1.36E+01
35	1238.89	1234 -	1242	2.67E+01	21.98	5.66E+01	1.60E+01
36	1460.80	1455 -	1465	3.33E+02	38.14	1.63E+01	9.13E+00
37	1482.77	1479 -	1486	1.01E+01	11.49	1.39E+01	7.87E+00
38	1629.78	1625 -	1632	8.42E+00	8.94	7.17E+00	5.60E+00
39	1658.56	1653 -	1661	9.63E+00	8.26	4.75E+00	4.48E+00
40	1728.59	1724 -	1733	1.96E+01	12.25	1.08E+01	6.96E+00
41	1764.33	1759 -	1767	4.90E+01	14.00	0.00E+00	0.00E+00
42	1841.07	1837 -	1843	5.13E+00	7.52	5.75E+00	4.93E+00
43	1847.27	1844 -	1849	7.00E+00	5.29	0.00E+00	0.00E+00
44	1959.35	1954 -	1964	1.50E+01	10.11	6.00E+00	5.34E+00
45	2039.87	2036 -	2042	6.19E+00	6.65	3.63E+00	3.63E+00
46	2293.63	2290 -	2295	4.50E+00	5.74	3.00E+00	3.18E+00
47	2614.12	2607 -	2617	4.70E+01	13.71	0.00E+00	0.00E+00

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

PEAK WITH NID REPORT

Peak Analysis Performed on : 4/13/2016 9:07:51AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Peak Match Tolerance : 1.000 keV

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
M	1	47.02	43 -	50	47.25	1.59E+02	81.02	9.89E+02	PB-210
	2	75.10	72 -	81	75.32	3.83E+02	79.57	9.00E+02	AM-243
	3	77.47	72 -	81	77.68	6.13E+02	87.66	8.57E+02	TI-44
	4	87.66	86 -	90	87.87	6.22E+01	70.86	1.07E+03	SN-126
M									CD-109
									LU-176
	5	93.30	91 -	99	93.50	1.75E+02	101.45	1.37E+03	GA-67
	6	186.07	183 -	190	186.23	1.52E+02	68.53	6.84E+02	RA-226
	7	238.98	234 -	248	239.11	5.03E+02	61.64	3.24E+02	PB-212
	8	242.05	234 -	248	242.17	1.75E+02	64.65	3.24E+02	.....
	9	270.01	266 -	274	270.12	6.40E+01	55.90	4.42E+02	.....
	10	295.63	292 -	299	295.73	2.76E+02	59.03	3.98E+02	PB-214
	11	300.54	299 -	304	300.63	3.88E+01	36.28	2.38E+02	GA-67
									PB-212
									BI-210M
	12	328.05	325 -	332	328.13	4.71E+01	40.20	2.42E+02	LA-140
	13	338.79	336 -	342	338.86	8.56E+01	40.76	2.43E+02	AC-228
	14	352.19	347 -	357	352.26	4.52E+02	64.50	3.13E+02	PB-214
	15	431.61	429 -	435	431.64	3.27E+01	30.33	1.31E+02	.....
	16	463.75	458 -	469	463.76	4.42E+01	45.61	2.32E+02	SB-125
	17	477.89	475 -	483	477.89	3.53E+01	35.29	1.67E+02	BE-7
	18	510.45	505 -	514	510.44	1.14E+02	38.33	1.45E+02	.....
	19	527.51	521 -	531	527.49	3.06E+01	37.79	1.69E+02	.....
	20	569.83	567 -	574	569.79	4.15E+01	25.53	8.30E+01	BI-207
									CS-134
	21	583.52	580 -	588	583.47	1.19E+02	39.51	1.67E+02	TL-208
	22	609.68	606 -	612	609.62	3.14E+02	43.50	1.16E+02	BI-214
	23	624.70	622 -	628	624.63	2.06E+01	19.90	5.89E+01	.....
	24	694.73	691 -	698	694.63	2.17E+01	27.13	1.09E+02	SB-126
	25	767.97	763 -	771	767.84	2.46E+01	29.30	1.17E+02	.....
	26	794.68	791 -	799	794.54	2.34E+01	26.63	9.51E+01	.....
	27	893.26	887 -	901	893.07	3.08E+01	27.61	6.63E+01	.....
	28	911.76	907 -	918	911.57	1.23E+02	33.94	7.82E+01	LU-172
									AC-228
	29	933.29	929 -	937	933.09	2.36E+01	23.75	7.29E+01	.....
	30	969.54	965 -	972	969.32	5.43E+01	28.14	9.54E+01	AC-228
	31	1106.48	1100 -	1112	1106.20	3.01E+01	25.89	6.39E+01	.....
	32	1120.54	1115 -	1125	1120.26	6.95E+01	28.45	6.90E+01	SC-46
									BI-214
									TA-182
	33	1154.56	1148 -	1159	1154.26	2.36E+01	27.64	8.28E+01	.....
	34	1162.69	1160 -	1166	1162.39	1.38E+01	18.10	5.05E+01	.....
	35	1238.89	1234 -	1242	1238.55	2.67E+01	21.98	5.66E+01	CO-56
	36	1460.80	1455 -	1465	1460.38	3.33E+02	38.14	1.63E+01	K-40
	37	1482.77	1479 -	1486	1482.34	1.01E+01	11.49	1.39E+01	.....
	38	1629.78	1625 -	1632	1629.30	8.42E+00	8.94	7.17E+00	.....
	39	1658.56	1653 -	1661	1658.06	9.63E+00	8.26	4.75E+00	.....
	40	1728.59	1724 -	1733	1728.07	1.96E+01	12.25	1.08E+01	.....
	41	1764.33	1759 -	1767	1763.80	4.90E+01	14.00	0.00E+00	BI-214
	42	1841.07	1837 -	1843	1840.51	5.13E+00	7.52	5.75E+00	.....
	43	1847.27	1844 -	1849	1846.71	7.00E+00	5.29	0.00E+00	.....
	44	1959.35	1954 -	1964	1958.76	1.50E+01	10.11	6.00E+00	.....
	45	2039.87	2036 -	2042	2039.25	6.19E+00	6.65	3.63E+00	.....
	46	2293.63	2290 -	2295	2292.93	4.50E+00	5.74	3.00E+00	.....

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
47	2614.12	2607 -	2617	2613.34	4.70E+01	13.71	0.00E+00	TL-208

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 4/13/2016 9:07:51AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
M	1	47.02	1.59E+02	81.02	1.53E-02	1.58E-03
	2	75.10	3.83E+02	79.57	2.37E-02	2.10E-03
	3	77.47	6.13E+02	87.66	2.39E-02	2.18E-03
	4	87.66	6.22E+01	70.86	2.44E-02	2.51E-03
	5	93.30	1.75E+02	101.45	2.44E-02	2.40E-03
m	6	186.07	1.52E+02	68.53	1.83E-02	1.42E-03
	7	238.98	5.03E+02	61.64	1.52E-02	1.18E-03
	8	242.05	1.75E+02	64.65	1.51E-02	1.17E-03
	9	270.01	6.40E+01	55.90	1.38E-02	1.04E-03
	10	295.63	2.76E+02	59.03	1.28E-02	9.73E-04
	11	300.54	3.88E+01	36.28	1.26E-02	9.67E-04
	12	328.05	4.71E+01	40.20	1.17E-02	9.27E-04
	13	338.79	8.56E+01	40.76	1.14E-02	9.12E-04
	14	352.19	4.52E+02	64.50	1.11E-02	8.93E-04
	15	431.61	3.27E+01	30.33	9.28E-03	7.97E-04
	16	463.75	4.42E+01	45.61	8.72E-03	7.65E-04
	17	477.89	3.53E+01	35.29	8.49E-03	7.51E-04
	18	510.45	1.14E+02	38.33	8.02E-03	7.19E-04
	19	527.51	3.06E+01	37.79	7.79E-03	7.02E-04
	20	569.83	4.15E+01	25.53	7.28E-03	6.59E-04
	21	583.52	1.19E+02	39.51	7.14E-03	6.46E-04
	22	609.68	3.14E+02	43.50	6.87E-03	6.20E-04
	23	624.70	2.06E+01	19.90	6.72E-03	6.05E-04
	24	694.73	2.17E+01	27.13	6.13E-03	5.41E-04
	25	767.97	2.46E+01	29.30	5.62E-03	4.81E-04
	26	794.68	2.34E+01	26.63	5.46E-03	4.59E-04
	27	893.26	3.08E+01	27.61	4.93E-03	3.79E-04
	28	911.76	1.23E+02	33.94	4.85E-03	3.72E-04
	29	933.29	2.36E+01	23.75	4.75E-03	3.68E-04

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
30	969.54	5.43E+01	28.14	4.60E-03	3.61E-04
31	1106.48	3.01E+01	25.89	4.12E-03	3.36E-04
32	1120.54	6.95E+01	28.45	4.08E-03	3.33E-04
33	1154.56	2.36E+01	27.64	3.98E-03	3.27E-04
34	1162.69	1.38E+01	18.10	3.95E-03	3.25E-04
35	1238.89	2.67E+01	21.98	3.75E-03	3.09E-04
36	1460.80	3.33E+02	38.14	3.29E-03	2.69E-04
37	1482.77	1.01E+01	11.49	3.25E-03	2.66E-04
38	1629.78	8.42E+00	8.94	3.03E-03	2.44E-04
39	1658.56	9.63E+00	8.26	2.99E-03	2.40E-04
40	1728.59	1.96E+01	12.25	2.90E-03	2.29E-04
41	1764.33	4.90E+01	14.00	2.86E-03	2.24E-04
42	1841.07	5.13E+00	7.52	2.77E-03	2.13E-04
43	1847.27	7.00E+00	5.29	2.77E-03	2.13E-04
44	1959.35	1.50E+01	10.11	2.66E-03	2.13E-04
45	2039.87	6.19E+00	6.65	2.59E-03	2.13E-04
46	2293.63	4.50E+00	5.74	2.40E-03	2.13E-04
47	2614.12	4.70E+01	13.71	2.24E-03	2.13E-04

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on 4/13/2016 9:07:51AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000035178.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	47.02	1.59E+02	81.02	3.04E+01	2.01E+01	1.28E+02	8.35E+01
M	2	75.10	3.83E+02	79.57			3.83E+02	7.96E+01
m	3	77.47	6.13E+02	87.66			6.13E+02	8.77E+01
	4	87.66	6.22E+01	70.86	3.05E+00	2.15E+00	5.92E+01	7.09E+01
	5	93.30	1.75E+02	101.45	7.72E+01	4.69E+00	9.73E+01	1.02E+02
	6	186.07	1.52E+02	68.53	3.82E+01	5.87E+00	1.14E+02	6.88E+01
M	7	238.98	5.03E+02	61.64	1.06E+01	5.71E+00	4.92E+02	6.19E+01
m	8	242.05	1.75E+02	64.65			1.75E+02	6.47E+01
	9	270.01	6.40E+01	55.90			6.40E+01	5.59E+01
	10	295.63	2.76E+02	59.03			2.76E+02	5.90E+01
	11	300.54	3.88E+01	36.28			3.88E+01	3.63E+01
	12	328.05	4.71E+01	40.20			4.71E+01	4.02E+01

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
13	338.79	8.56E+01	40.76			8.56E+01	4.08E+01
14	352.19	4.52E+02	64.50	0.00E+00	0.00E+00	4.52E+02	6.45E+01
15	431.61	3.27E+01	30.33			3.27E+01	3.03E+01
16	463.75	4.42E+01	45.61			4.42E+01	4.56E+01
17	477.89	3.53E+01	35.29			3.53E+01	3.53E+01
18	510.45	1.14E+02	38.33			1.14E+02	3.83E+01
19	527.51	3.06E+01	37.79			3.06E+01	3.78E+01
20	569.83	4.15E+01	25.53			4.15E+01	2.55E+01
21	583.52	1.19E+02	39.51	5.06E+00	2.98E+00	1.14E+02	3.96E+01
22	609.68	3.14E+02	43.50	2.01E+00	3.84E+00	3.12E+02	4.37E+01
23	624.70	2.06E+01	19.90			2.06E+01	1.99E+01
24	694.73	2.17E+01	27.13			2.17E+01	2.71E+01
25	767.97	2.46E+01	29.30			2.46E+01	2.93E+01
26	794.68	2.34E+01	26.63			2.34E+01	2.66E+01
27	893.26	3.08E+01	27.61			3.08E+01	2.76E+01
28	911.76	1.23E+02	33.94	2.99E+00	2.93E+00	1.20E+02	3.41E+01
29	933.29	2.36E+01	23.75			2.36E+01	2.37E+01
30	969.54	5.43E+01	28.14			5.43E+01	2.81E+01
31	1106.48	3.01E+01	25.89			3.01E+01	2.59E+01
32	1120.54	6.95E+01	28.45			6.95E+01	2.84E+01
33	1154.56	2.36E+01	27.64			2.36E+01	2.76E+01
34	1162.69	1.38E+01	18.10			1.38E+01	1.81E+01
35	1238.89	2.67E+01	21.98			2.67E+01	2.20E+01
36	1460.80	3.33E+02	38.14			3.33E+02	3.81E+01
37	1482.77	1.01E+01	11.49			1.01E+01	1.15E+01
38	1629.78	8.42E+00	8.94			8.42E+00	8.94E+00
39	1658.56	9.63E+00	8.26			9.63E+00	8.26E+00
40	1728.59	1.96E+01	12.25			1.96E+01	1.22E+01
41	1764.33	4.90E+01	14.00			4.90E+01	1.40E+01
42	1841.07	5.13E+00	7.52			5.13E+00	7.52E+00
43	1847.27	7.00E+00	5.29			7.00E+00	5.29E+00
44	1959.35	1.50E+01	10.11			1.50E+01	1.01E+01
45	2039.87	6.19E+00	6.65			6.19E+00	6.65E+00
46	2293.63	4.50E+00	5.74			4.50E+00	5.74E+00
47	2614.12	4.70E+01	13.71			4.70E+01	1.37E+01

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

AREA CORRECTION REPORT

REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 4/13/2016 9:07:51AM

Ref. Peak Energy : 0.00

Reference Date :

Peak Ratio : 0.00

Uncertainty : 0.00

Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000035178.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
M	1	47.02	1.59E+02	81.02	3.04E+01	2.01E+01	1.28E+02	8.35E+01
	2	75.10	3.83E+02	79.57			3.83E+02	7.96E+01
	3	77.47	6.13E+02	87.66			6.13E+02	8.77E+01
	4	87.66	6.22E+01	70.86	3.05E+00	2.15E+00	5.92E+01	7.09E+01
	5	93.30	1.75E+02	101.45	7.72E+01	4.69E+00	9.73E+01	1.02E+02
M	6	186.07	1.52E+02	68.53	3.82E+01	5.87E+00	1.14E+02	6.88E+01
	7	238.98	5.03E+02	61.64	1.06E+01	5.71E+00	4.92E+02	6.19E+01
	8	242.05	1.75E+02	64.65			1.75E+02	6.47E+01
	9	270.01	6.40E+01	55.90			6.40E+01	5.59E+01
	10	295.63	2.76E+02	59.03			2.76E+02	5.90E+01
	11	300.54	3.88E+01	36.28			3.88E+01	3.63E+01
	12	328.05	4.71E+01	40.20			4.71E+01	4.02E+01
	13	338.79	8.56E+01	40.76			8.56E+01	4.08E+01
	14	352.19	4.52E+02	64.50	0.00E+00	0.00E+00	4.52E+02	6.45E+01
	15	431.61	3.27E+01	30.33			3.27E+01	3.03E+01
	16	463.75	4.42E+01	45.61			4.42E+01	4.56E+01
	17	477.89	3.53E+01	35.29			3.53E+01	3.53E+01
	18	510.45	1.14E+02	38.33			1.14E+02	3.83E+01
	19	527.51	3.06E+01	37.79			3.06E+01	3.78E+01
	20	569.83	4.15E+01	25.53			4.15E+01	2.55E+01
	21	583.52	1.19E+02	39.51	5.06E+00	2.98E+00	1.14E+02	3.96E+01
	22	609.68	3.14E+02	43.50	2.01E+00	3.84E+00	3.12E+02	4.37E+01
	23	624.70	2.06E+01	19.90			2.06E+01	1.99E+01
	24	694.73	2.17E+01	27.13			2.17E+01	2.71E+01
	25	767.97	2.46E+01	29.30			2.46E+01	2.93E+01
	26	794.68	2.34E+01	26.63			2.34E+01	2.66E+01
	27	893.26	3.08E+01	27.61			3.08E+01	2.76E+01
	28	911.76	1.23E+02	33.94	2.99E+00	2.93E+00	1.20E+02	3.41E+01
	29	933.29	2.36E+01	23.75			2.36E+01	2.37E+01
	30	969.54	5.43E+01	28.14			5.43E+01	2.81E+01
	31	1106.48	3.01E+01	25.89			3.01E+01	2.59E+01
	32	1120.54	6.95E+01	28.45			6.95E+01	2.84E+01
	33	1154.56	2.36E+01	27.64			2.36E+01	2.76E+01
	34	1162.69	1.38E+01	18.10			1.38E+01	1.81E+01
	35	1238.89	2.67E+01	21.98			2.67E+01	2.20E+01
	36	1460.80	3.33E+02	38.14			3.33E+02	3.81E+01
	37	1482.77	1.01E+01	11.49			1.01E+01	1.15E+01
	38	1629.78	8.42E+00	8.94			8.42E+00	8.94E+00
	39	1658.56	9.63E+00	8.26			9.63E+00	8.26E+00
	40	1728.59	1.96E+01	12.25			1.96E+01	1.22E+01
	41	1764.33	4.90E+01	14.00			4.90E+01	1.40E+01

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
42	1841.07	5.13E+00	7.52			5.13E+00	7.52E+00
43	1847.27	7.00E+00	5.29			7.00E+00	5.29E+00
44	1959.35	1.50E+01	10.11			1.50E+01	1.01E+01
45	2039.87	6.19E+00	6.65			6.19E+00	6.65E+00
46	2293.63	4.50E+00	5.74			4.50E+00	5.74E+00
47	2614.12	4.70E+01	13.71			4.70E+01	1.37E+01

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \VOR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BE-7	0.985	477.59 *	10.42	9.60E-01	9.63E-01
K-40	1.000	1460.81 *	10.67	1.59E+01	2.26E+00
GA-67	0.650	93.31 *	35.70	6.87E+01	2.70E+02
		208.95	2.24		
		300.22 *	16.00	1.18E+02	4.61E+02
CD-109	0.978	88.03 *	3.72	1.14E+00	1.37E+00
SN-126	0.999	87.57 *	37.00	1.10E-01	1.32E-01
BI-207	0.407	569.67 *	97.72	9.79E-02	6.09E-02
		1063.62	74.90		
TL-208	0.855	583.14 *	30.22	8.89E-01	3.19E-01
		860.37	4.48		
		2614.66 *	35.85	9.82E-01	3.01E-01
PB-210	0.957	46.50 *	4.25	3.32E+00	2.19E+00
PB-212	0.980	238.63 *	44.60	1.22E+00	1.80E-01
		300.09 *	3.41	1.51E+00	1.42E+00
BI-214	0.918	609.31 *	46.30	1.65E+00	2.74E-01
		1120.29 *	15.10	1.89E+00	7.91E-01
		1764.49 *	15.80	1.82E+00	5.39E-01
		2204.22	4.98		
PB-214	0.983	295.21 *	19.19	1.88E+00	4.28E-01
		351.92 *	37.19	1.85E+00	3.03E-01
RA-226	0.997	186.21 *	3.28	3.18E+00	6.13E+00
AC-228	0.947	338.32 *	11.40	1.10E+00	5.32E-01
		911.07 *	27.70	1.50E+00	4.41E-01
		969.11 *	16.60	1.19E+00	6.25E-01

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
AM-243	0.971	74.67 *	66.00	4.11E-01	9.29E-02

* = Energy line found in the spectrum.

- = Manually added nuclide.

? = Manually edited nuclide.

Energy Tolerance : 1.000 keV

Nuclide confidence index threshold = 0.30

Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/13/2016 9:07:51AM
 Peak Locate From Channel : 1
 Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m 3	77.47	1.70180E-01	7.15		
m 8	242.05	4.85375E-02	18.50		
9	270.01	1.77778E-02	43.67		
12	328.05	1.30721E-02	42.71	Tol.	LA-140
15	431.61	9.09297E-03	46.33	Sum	
16	463.75	1.22656E-02	51.64		
18	510.45	3.15405E-02	16.88		
19	527.51	8.48913E-03	61.83		
23	624.70	5.71111E-03	48.39		
24	694.73	6.03984E-03	62.39	Tol.	SB-126
25	767.97	6.82898E-03	59.59		
26	794.68	6.51213E-03	56.80		
27	893.26	8.56771E-03	44.76		
29	933.29	6.54630E-03	50.39		
31	1106.48	8.35126E-03	43.06		
33	1154.56	6.55128E-03	58.60		
34	1162.69	3.82479E-03	65.72		
35	1238.89	7.41162E-03	41.19	Tol.	CO-56
37	1482.77	2.79412E-03	57.11		
38	1629.78	2.33796E-03	53.13		
39	1658.56	2.67361E-03	42.92		
40	1728.59	5.44444E-03	31.24		
42	1841.07	1.42361E-03	73.33		
43	1847.27	1.94444E-03	37.80		
44	1959.35	4.16667E-03	33.71		
45	2039.87	1.71875E-03	53.75		
46	2293.63	1.25000E-03	63.83		

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet
 Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BE-7	0.98	477.59 *	10.42	9.60E-01	9.63E-01
K-40	1.00	1460.81 *	10.67	1.59E+01	2.26E+00
GA-67	0.65	93.31 *	35.70	6.87E+01	2.70E+02
		208.95	2.24		
		300.22 *	16.00	1.18E+02	4.61E+02
CD-109	0.97	88.03 *	3.72	1.14E+00	1.37E+00
SN-126	0.99	87.57 *	37.00	1.10E-01	1.32E-01
BI-207	0.40	569.67 *	97.72	9.79E-02	6.09E-02
		1063.62	74.90		
TL-208	0.85	583.14 *	30.22	8.89E-01	3.19E-01
		860.37	4.48		
		2614.66 *	35.85	9.82E-01	3.01E-01
PB-210	0.95	46.50 *	4.25	3.32E+00	2.19E+00
PB-212	0.98	238.63 *	44.60	1.22E+00	1.80E-01
		300.09 *	3.41	1.51E+00	1.42E+00
BI-214	0.91	609.31 *	46.30	1.65E+00	2.74E-01
		1120.29 *	15.10	1.89E+00	7.91E-01
		1764.49 *	15.80	1.82E+00	5.39E-01
		2204.22	4.98		
PP-214	0.98	295.21 *	19.19	1.88E+00	4.28E-01
		351.92 *	37.19	1.85E+00	3.03E-01
RA-226	0.99	186.21 *	3.28	3.18E+00	6.13E+00
AC-228	0.94	338.32 *	11.40	1.10E+00	5.32E-01
		911.07 *	27.70	1.50E+00	4.41E-01
		969.11 *	16.60	1.19E+00	6.25E-01
AM-243	0.97	74.67 *	66.00	4.11E-01	9.29E-02

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

* = Energy line found in the spectrum.

- = Manually added nuclide.

? = Manually edited nuclide.

@ = Energy line not used for Weighted Mean Activity

Energy Tolerance : 1.000 keV

Nuclide confidence index threshold = 0.30

Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
BE-7	0.985	9.60E-01	9.63E-01	
K-40	1.000	1.59E+01	2.26E+00	
GA-67	0.650	5.53E+01	2.09E+02	
? CD-109	0.978	1.14E+00	1.37E+00	
? SN-126	0.999	1.10E-01	1.32E-01	
BI-207	0.407	9.79E-02	6.09E-02	
TL-208	0.855	9.38E-01	2.19E-01	
PB-210	0.957	3.32E+00	2.19E+00	
PB-212	0.980	1.21E+00	1.79E-01	
BI-214	0.918	1.70E+00	2.33E-01	
PB-214	0.983	1.86E+00	2.47E-01	
RA-226	0.997	3.18E+00	6.13E+00	
AC-228	0.947	1.30E+00	2.98E-01	
AM-243	0.971	4.11E-01	9.29E-02	

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/13/2016 9:07:51AM
 Peak Locate From Channel : 1
 Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m 3	77.47	1.70180E-01	7.15		
m 8	242.05	4.85375E-02	18.50		
9	270.01	1.77778E-02	43.67		
12	328.05	1.30721E-02	42.71	Tol.	LA-140
15	431.61	9.09297E-03	46.33	Sum	
16	463.75	1.22656E-02	51.64		
18	510.45	3.15405E-02	16.88		
19	527.51	8.48913E-03	61.83		
23	624.70	5.71111E-03	48.39		
24	694.73	6.03984E-03	62.39	Tol.	SB-126
25	767.97	6.82898E-03	59.59		
26	794.68	6.51213E-03	56.80		
27	893.26	8.56771E-03	44.76		
29	933.29	6.54630E-03	50.39		
31	1106.48	8.35126E-03	43.06		
33	1154.56	6.55128E-03	58.60		
34	1162.69	3.82479E-03	65.72		
35	1238.89	7.41162E-03	41.19	Tol.	CO-56
37	1482.77	2.79412E-03	57.11		
38	1629.78	2.33796E-03	53.13		
39	1658.56	2.67361E-03	42.92		
40	1728.59	5.44444E-03	31.24		
42	1841.07	1.42361E-03	73.33		
43	1847.27	1.94444E-03	37.80		
44	1959.35	4.16667E-03	33.71		
45	2039.87	1.71875E-03	53.75		
46	2293.63	1.25000E-03	63.83		

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	*	10.42	9.60E-01	1.56E+00	1.56E+00
+	NA-22	1274.54		99.94	-7.94E-02	1.37E-01	1.37E-01
+	NA-24	1368.53		99.99	8.90E+11	2.00E+12	2.93E+12
		2754.09		99.86	2.27E+11		2.00E+12
+	AL-26	1808.65		99.76	-3.59E-02	6.45E-02	6.45E-02
+	K-40	1460.81	*	10.67	1.59E+01	1.00E+00	1.00E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-4.20E-02	8.14E-02	8.14E-02
		78.34		96.00	2.59E-01		1.09E-01
+	SC-46	889.25		99.98	-1.60E-02	1.29E-01	1.29E-01
		1120.51		99.98	2.84E-01		2.37E-01
+	V-48	983.52		99.98	8.36E-02	3.82E-01	3.82E-01
		1312.10		97.50	2.10E-01		4.24E-01
+	CR-51	320.08		9.83	4.70E-01	1.60E+00	1.60E+00
+	MN-54	834.83		99.97	3.89E-02	1.17E-01	1.17E-01
+	CO-56	846.75		99.96	4.31E-02	1.42E-01	1.42E-01
		1037.75		14.03	-1.56E-01		1.03E+00
		1238.25		67.00	1.93E-01		2.89E-01
		1771.40		15.51	-1.08E+00		3.57E-01
		2598.48		16.90	-2.07E-01		4.15E-01
+	CO-57	122.06		85.51	4.57E-04	6.96E-02	6.96E-02
		136.48		10.60	2.97E-01		6.18E-01
+	CO-58	810.76		99.40	-1.17E-02	1.13E-01	1.13E-01
+	FE-59	1099.22		56.50	4.09E-02	3.02E-01	3.02E-01
		1291.56		43.20	-1.56E-02		4.57E-01
+	CO-60	1173.22		100.00	-7.30E-02	1.25E-01	1.25E-01
		1332.49		100.00	7.48E-05		1.39E-01
+	ZN-65	1115.52		50.75	-4.37E-03	2.39E-01	2.39E-01
+	GA-67	93.31	*	35.70	6.87E+01	1.18E+02	1.18E+02
		208.95		2.24	8.15E+02		1.29E+03
		300.22	*	16.00	1.18E+02		1.79E+02
+	SE-75	121.11		16.70	-7.79E-02	1.19E-01	3.86E-01
		136.00		59.20	4.55E-02		1.19E-01
		264.65		59.80	-2.92E-02		1.57E-01
		279.53		25.20	1.28E-01		3.92E-01
		400.65		11.40	4.84E-02		8.56E-01
+	RB-82	776.52		13.00	-6.08E-02	1.74E+00	1.74E+00
+	RB-83	520.41		46.00	6.78E-02	2.49E-01	2.49E-01
		529.64		30.30	-1.10E-02		3.66E-01
		552.65		16.40	-2.41E-01		6.57E-01

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	KR-85	513.99	0.43	-7.31E-01	2.75E+01
+	SR-85	513.99	99.27	-4.28E-03	1.61E-01
+	Y-88	898.02	93.40	-2.81E-02	1.10E-01
		1836.01	99.38	2.91E-02	1.27E-01
+	NB-93M	16.57	9.43	-6.38E+00	9.89E+01
+	NB-94	702.63	100.00	-6.79E-03	8.94E-02
		871.10	100.00	-1.21E-02	8.94E-02
+	NB-95	765.79	99.81	1.06E-01	2.08E-01
+	NB-95M	235.69	25.00	7.62E+01	1.01E+02
+	ZR-95	724.18	43.70	1.56E-02	2.47E-01
		756.72	55.30	1.00E-01	2.47E-01
+	MO-99	181.06	6.20	2.94E+02	8.58E+02
		739.58	12.80	-1.38E+02	8.58E+02
		778.00	4.56	-1.76E+02	2.47E+03
+	RU-103	497.08	89.00	4.67E-02	1.60E-01
+	RU-106	621.84	9.80	-1.22E-01	8.78E-01
+	AG-108M	433.93	89.90	-1.87E-02	9.06E-02
		614.37	90.40	-7.50E-02	1.30E-01
		722.95	90.50	-8.05E-02	1.24E-01
+	CD-109	88.03	* 3.72	1.14E+00	2.24E+00
+	AG-110M	657.75	93.14	-5.94E-02	1.20E-01
		677.61	10.53	3.43E-03	8.83E-01
		706.67	16.46	-2.23E-01	6.49E-01
		763.93	21.98	-1.18E-01	1.64E-01
		884.67	71.63	1.48E-02	1.48E-01
		1384.27	23.94	-2.44E-01	4.70E-01
+	CD-113M	263.70	0.02	-2.45E+01	3.52E+02
+	SN-113	255.12	1.93	-1.02E+00	1.66E-01
		391.69	64.90	8.31E-02	1.66E-01
+	TE123M	159.00	84.10	2.57E-02	8.85E-02
+	SB-124	602.71	97.87	5.68E-02	1.44E-01
		645.85	7.26	-1.20E-01	1.70E+00
		722.78	11.10	-9.03E-01	1.39E+00
		1691.02	49.00	-6.93E-02	2.40E-01
+	I-125	35.49	6.49	6.00E-01	3.51E+00
+	SB-125	176.33	6.89	-3.10E-02	2.94E-01
		427.89	29.33	5.28E-02	2.94E-01
		463.38	10.35	4.82E-01	9.67E-01
		600.56	17.80	1.93E-01	5.78E-01
		635.90	11.32	2.56E-01	8.91E-01
+	SB-126	414.70	83.30	-9.20E-02	4.64E-01
		666.33	99.60	4.17E-02	5.07E-01
		695.00	99.60	2.12E-01	5.34E-01
		720.50	53.80	1.15E-01	9.31E-01
+	SN-126	87.57	* 37.00	1.10E-01	2.17E-01
+	SB-127	473.00	25.00	3.77E+00	4.09E+01
		685.20	35.70	1.67E+01	4.09E+01
		783.80	14.70	-2.24E+01	9.77E+01

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	I-129	29.78	57.00	8.00E-02	5.18E-01	5.18E-01
		33.60	13.20	-1.60E-01		1.46E+00
		39.58	7.52	-8.13E-01		1.63E+00
+	I-131	284.30	6.05	-5.29E+00	1.17E+00	1.43E+01
		364.48	81.20	6.49E-01		1.17E+00
		636.97	7.26	6.83E+00		1.52E+01
		722.89	1.80	-4.44E+01		6.84E+01
+	TE-132	49.72	13.10	-1.75E+01	3.20E+01	2.65E+02
		228.16	88.00	2.01E+00		3.20E+01
+	BA-133	81.00	33.00	-8.00E-02	2.10E-01	2.14E-01
		302.84	17.80	7.59E-02		5.12E-01
		356.01	60.00	3.17E-03		2.10E-01
+	I-133	529.87	86.30	-1.38E+07	4.61E+08	4.61E+08
+	XE-133	81.00	38.00	-2.72E+00	7.28E+00	7.28E+00
+	CS-134	563.23	8.38	-2.60E-01	1.16E-01	1.05E+00
		569.32	15.43	1.85E-01		6.49E-01
		604.70	97.60	2.83E-02		1.16E-01
		795.84	85.40	8.64E-02		1.41E-01
		801.93	8.73	2.33E-02		1.14E+00
+	CS-135	268.24	16.00	8.78E-02	5.43E-01	5.43E-01
+	@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41	28.60	1.00E+26		1.00E+26
	@	1678.03	9.54	1.00E+26		1.00E+26
+	CS-136	153.22	7.46	3.19E+00	3.85E-01	3.79E+00
		163.89	4.61	-2.39E+00		5.64E+00
		176.55	13.56	-2.21E+00		1.82E+00
		273.65	12.66	1.39E-01		2.98E+00
		340.57	48.50	1.39E-01		9.49E-01
		818.50	99.70	4.69E-02		3.85E-01
		1048.07	79.60	-1.77E-02		6.04E-01
		1235.34	19.70	2.49E-01		3.21E+00
+	CS-137	661.65	85.12	5.26E-03	1.29E-01	1.29E-01
+	LA-138	788.74	34.00	2.75E-02	1.83E-01	3.05E-01
		1435.80	66.00	2.41E-02		1.83E-01
+	CE-139	165.85	80.35	2.94E-02	9.09E-02	9.09E-02
+	BA-140	162.64	6.70	-4.79E-01	1.38E+00	4.07E+00
		304.84	4.50	1.28E+00		8.24E+00
		423.70	3.20	5.16E+00		1.22E+01
		437.55	2.00	7.27E-01		1.88E+01
		537.32	25.00	-5.59E-02		1.38E+00
+	LA-140	328.77	20.50	1.28E+00	6.44E-01	1.92E+00
		487.03	45.50	2.88E-01		8.50E-01
		815.85	23.50	-3.23E-02		1.65E+00
		1596.49	95.49	1.70E-01		6.44E-01
+	CE-141	145.44	48.40	7.22E-02	2.23E-01	2.23E-01
+	CE-143	57.36	11.80	-3.96E+05	3.74E+05	7.75E+05
		293.26	42.00	2.84E+04		3.74E+05
		664.55	5.20	1.48E+06		2.64E+06
+	CE-144	133.54	10.80	-4.18E-01	5.49E-01	5.49E-01

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PM-144	476.78	42.00	9.25E-02	8.87E-02	2.47E-01
		618.01	98.60	-1.36E-02		8.87E-02
		696.49	99.49	3.22E-02		1.21E-01
+	PM-145	36.85	21.70	1.75E-01	3.54E-01	6.79E-01
		37.36	39.70	-1.17E-01		3.54E-01
		42.30	15.10	4.33E-02		7.19E-01
		72.40	2.31	-1.02E+01		3.77E+00
+	PM-146	453.90	39.94	5.37E-02	2.20E-01	2.20E-01
		735.90	14.01	2.28E-01		7.52E-01
		747.13	13.10	-9.13E-02		7.77E-01
+	ND-147	91.11	28.90	-1.50E+00	1.58E+00	1.58E+00
		531.02	13.10	-2.39E-01		3.58E+00
+	PM-149	285.90	3.10	1.16E+03	1.59E+04	1.59E+04
+	EU-152	121.78	20.50	1.78E-03	2.71E-01	2.71E-01
		244.69	5.40	-5.56E-01		1.86E+00
		344.27	19.13	-3.20E-02		4.47E-01
		778.89	9.20	2.86E-01		1.11E+00
		964.01	10.40	3.21E-02		1.12E+00
		1085.78	7.22	-1.76E-01		1.75E+00
		1112.02	9.60	-2.14E-02		1.19E+00
		1407.95	14.94	3.29E-01		8.79E-01
+	GD-153	97.43	31.30	-3.15E-01	1.96E-01	1.96E-01
		103.18	22.20	-1.79E-01		2.64E-01
+	EU-154	123.07	40.50	6.62E-02	1.42E-01	1.42E-01
		723.30	19.70	-3.72E-01		5.74E-01
		873.19	11.50	-2.37E-01		7.71E-01
		996.32	10.30	-4.23E-02		9.95E-01
		1004.76	17.90	2.22E-01		6.38E-01
		1274.45	35.50	-2.20E-01		3.81E-01
+	EU-155	86.50	30.90	2.14E-01	2.64E-01	2.64E-01
		105.30	20.70	4.38E-02		2.77E-01
+	EU-156	811.77	10.40	3.47E-01	2.97E+00	2.97E+00
		1153.47	7.20	4.34E+00		7.34E+00
		1230.71	8.90	1.95E+00		5.29E+00
+	HO-166M	184.41	72.60	1.59E-01	1.15E-01	1.15E-01
		280.45	29.60	8.98E-02		2.81E-01
		410.94	11.10	-2.96E-01		7.68E-01
		711.69	54.10	-7.02E-02		1.73E-01
+	TM-171	66.72	0.14	-5.44E+01	5.79E+01	5.79E+01
+	HF-172	81.75	4.52	-2.75E-01	5.02E-01	1.54E+00
		125.81	11.30	-1.92E-01		5.02E-01
+	LU-172	181.53	20.60	2.61E+00	3.41E+00	5.80E+00
		810.06	16.63	-2.43E+00		9.39E+00
		912.12	15.25	4.00E+01		2.31E+01
		1093.66	62.50	4.71E-02		3.41E+00
+	LU-173	100.72	5.24	2.58E-01	4.39E-01	1.10E+00
		272.11	21.20	1.20E-01		4.39E-01
+	HF-175	343.40	34.00	-9.54E-03	1.34E-01	1.34E-01
+	LU-176	88.34	13.30	3.37E-01	8.58E-02	6.20E-01

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
LU-176	201.83	86.00	-1.65E-02	8.58E-02	8.63E-02
	306.78	94.00	5.12E-03		8.58E-02
+ TA-182	67.75	41.20	-1.14E-01	2.21E-01	2.21E-01
	1121.30	34.90	9.76E-01		6.54E-01
	1189.05	16.23	1.15E-01		9.40E-01
	1221.41	26.98	1.76E-01		6.23E-01
	1231.02	11.44	1.52E-01		1.35E+00
+ IR-192	308.46	29.68	4.76E-02	2.09E-01	3.47E-01
	468.07	48.10	-4.30E-02		2.09E-01
+ HG-203	279.19	77.30	4.62E-02	1.66E-01	1.66E-01
+ BI-207	569.67	* 97.72	9.79E-02	9.20E-02	9.20E-02
	1063.62	74.90	-1.79E-02		1.53E-01
+ TL-208	583.14	* 30.22	8.89E-01	5.65E-02	4.48E-01
	860.37	4.48	6.22E-01		2.59E+00
	2614.66	* 35.85	9.82E-01		5.65E-02
+ BI-210M	262.00	45.00	-1.46E-02	1.80E-01	1.80E-01
	300.00	23.00	-1.84E+00		4.08E-01
+ PB-210	46.50	* 4.25	3.32E+00	3.49E+00	3.49E+00
+ PB-211	404.34	2.90	2.47E-01	3.15E+00	3.15E+00
	831.96	2.90	-5.18E-01		3.78E+00
+ BI-212	727.17	11.80	5.32E-01	1.08E+00	1.08E+00
	1620.62	2.75	7.02E-01		3.18E+00
+ PB-212	238.63	* 44.60	1.22E+00	3.42E-01	3.42E-01
	300.09	* 3.41	1.51E+00		2.29E+00
+ BI-214	609.31	* 46.30	1.65E+00	1.01E-01	2.37E-01
	1120.29	* 15.10	1.89E+00		1.11E+00
	1764.49	* 15.80	1.82E+00		1.01E-01
	2204.22	4.98	1.32E+00		2.92E+00
+ PB-214	295.21	* 19.19	1.88E+00	3.36E-01	5.66E-01
	351.92	* 37.19	1.85E+00		3.36E-01
+ RN-219	401.80	6.50	2.20E-01	1.33E+00	1.33E+00
+ RA-223	323.87	3.88	-3.20E-01	1.96E+00	1.96E+00
+ RA-224	240.98	3.95	1.86E+01	3.95E+00	3.95E+00
+ RA-225	40.00	31.00	-7.07E-01	1.42E+00	1.42E+00
+ RA-226	186.21	* 3.28	3.18E+00	3.08E+00	3.08E+00
+ TH-227	50.10	8.40	-7.30E-02	1.06E+00	1.11E+00
	236.00	11.50	7.99E-01		1.06E+00
	256.20	6.30	-5.04E-01		1.21E+00
+ AC-228	338.32	* 11.40	1.10E+00	5.70E-01	8.04E-01
	911.07	* 27.70	1.50E+00		5.70E-01
	969.11	* 16.60	1.19E+00		9.25E-01
+ TH-230	48.46	16.90	9.66E-01	6.52E-01	6.52E-01
	62.85	4.60	2.52E+00		1.88E+00
	67.67	0.37	-1.07E+01		2.08E+01
+ PA-231	283.67	1.60	-1.82E+00	3.94E+00	4.93E+00
	302.67	2.30	5.84E-01		3.94E+00
+ TH-231	25.64	14.70	-5.53E-01	1.10E+00	3.84E+00
	84.21	6.40	1.39E-01		1.10E+00

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PA-233	311.98	38.60	-9.53E-02	4.08E-01	4.08E-01
+	PA-234	131.20	20.40	-9.99E-03	2.76E-01	2.76E-01
		733.99	8.80	-6.03E-01		1.14E+00
		946.00	12.00	-4.91E-01		9.11E-01
+	PA-234M	1001.03	0.92	-2.39E+00	1.16E+01	1.16E+01
+	TH-234	63.29	3.80	1.43E+00	2.24E+00	2.24E+00
+	U-235	143.76	10.50	-1.53E-01	5.49E-01	5.49E-01
		163.35	4.70	-5.42E-01		1.28E+00
		205.31	4.70	-1.89E+00		1.52E+00
+	NP-237	86.50	12.60	5.18E-01	6.40E-01	6.40E-01
+	NP-239	106.10	22.70	-3.72E+00	8.92E+02	8.92E+02
		228.18	10.70	1.60E+02		2.54E+03
		277.60	14.10	1.39E+03		2.17E+03
+	AM-241	59.54	35.90	-1.88E-02	2.17E-01	2.17E-01
+	AM-243	74.67	66.00	4.11E-01	1.84E-01	1.84E-01
+	CM-243	209.75	3.29	1.15E+00	6.15E-01	2.39E+00
		228.14	10.60	4.54E-02		7.21E-01
		277.60	14.00	3.93E-01		6.15E-01

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = MDA value not calculated

@ = Half-life too short to be able to perform the decay correction

? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OF-GAMMA\ApexRoot\Countroom\Library\TMA2.NI.B

	Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
+	BE-7	477.59 *	10.42	1.56E+00	1.56E+00	9.60E-01	7.43E-01
	NA-22	1274.54	99.94	1.37E-01	1.37E-01	-7.94E-02	6.24E-02
	NA-24	1368.53	99.99	2.93E+12	2.00E+12	8.90E+11	1.31E+12
		2754.09	99.86	2.00E+12		2.27E+11	7.49E+11

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Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
AL-26	1808.65	99.76	6.45E-02	6.45E-02	-3.59E-02	2.41E-02
+ K-40	1460.81 *	10.67	1.00E+00	1.00E+00	1.59E+01	4.36E-01
@ AR-41	1293.64	99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
TI-44	67.88	94.40	8.14E-02	8.14E-02	-4.20E-02	3.96E-02
	78.34	96.00	1.09E-01		2.59E-01	5.34E-02
SC-46	889.25	99.98	1.29E-01	1.29E-01	-1.60E-02	5.86E-02
	1120.51	99.99	2.37E-01		2.84E-01	1.12E-01
V-48	983.52	99.98	3.82E-01	3.82E-01	8.36E-02	1.74E-01
	1312.10	97.50	4.24E-01		2.10E-01	1.90E-01
CR-51	320.08	9.83	1.60E+00	1.60E+00	4.70E-01	7.63E-01
MN-54	834.83	99.97	1.17E-01	1.17E-01	3.89E-02	5.38E-02
CO-56	846.75	99.96	1.42E-01	1.42E-01	4.31E-02	6.54E-02
	1037.75	14.03	1.03E+00		-1.56E-01	4.69E-01
	1238.25	67.00	2.89E-01		1.93E-01	1.33E-01
	1771.47	15.51	3.57E-01		-1.08E+00	1.13E-01
	2598.48	16.90	4.15E-01		-2.07E-01	1.31E-01
CO-57	122.06	35.51	6.96E-02	6.96E-02	4.57E-04	3.36E-02
	136.48	10.60	6.18E-01		2.97E-01	2.98E-01
CO-58	810.76	99.40	1.13E-01	1.13E-01	-1.17E-02	5.08E-02
FE-59	1099.22	56.50	3.02E-01	3.02E-01	4.09E-02	1.36E-01
	1291.56	43.20	4.57E-01		-1.56E-02	2.06E-01
CO-60	1173.22	100.00	1.25E-01	1.25E-01	-7.30E-02	5.68E-02
	1332.49	100.00	1.39E-01		7.48E-05	6.30E-02
ZN-65	1115.52	50.75	2.39E-01	2.39E-01	-4.37E-03	1.08E-01
+ GA-67	93.31 *	35.70	1.18E+02	1.18E+02	6.87E+01	5.79E+01
	208.95	2.24	1.29E+03		8.15E+02	6.25E+02
	300.22 *	16.00	1.79E+02		1.18E+02	8.54E+01
SE-75	121.11	16.70	3.86E-01	1.19E-01	-7.79E-02	1.86E-01
	136.00	59.20	1.19E-01		4.55E-02	5.75E-02
	264.65	59.80	1.57E-01		-2.92E-02	7.53E-02
	279.53	25.20	3.92E-01		1.28E-01	1.88E-01
	400.65	11.40	8.56E-01		4.84E-02	4.04E-01
RB-82	776.52	13.00	1.74E+00	1.74E+00	-6.08E-02	8.02E-01
RB-83	520.41	46.00	2.49E-01	2.49E-01	6.78E-02	1.17E-01
	529.64	30.30	3.66E-01		-1.10E-02	1.71E-01
	552.65	16.40	6.57E-01		-2.41E-01	3.05E-01
KR-85	513.99	0.43	2.75E+01	2.75E+01	-7.31E-01	1.31E+01
SR-85	513.99	99.27	1.61E-01	1.61E-01	-4.28E-03	7.65E-02
Y-88	898.02	93.40	1.10E-01	1.10E-01	-2.81E-02	4.89E-02
	1836.01	99.38	1.27E-01		2.91E-02	5.35E-02
NB-93M	16.57	9.43	9.89E+01	9.89E+01	-6.38E+00	4.80E+01
NB-94	702.63	100.00	1.06E-01	8.94E-02	-6.79E-03	4.94E-02
	871.10	100.00	8.94E-02		-1.21E-02	4.02E-02
NB-95	765.79	99.81	2.08E-01	2.08E-01	1.06E-01	9.69E-02
NB-95M	235.69	25.00	1.01E+02	1.01E+02	7.62E+01	4.92E+01
ZR-95	724.18	43.70	3.72E-01	2.47E-01	1.56E-02	1.74E-01
	756.72	55.30	2.47E-01		1.00E-01	1.14E-01
MO-99	181.06	6.20	1.13E+03	8.58E+02	2.94E+02	5.42E+02
	739.58	12.80	8.58E+02		-1.38E+02	3.95E+02
	778.00	4.50	2.47E+03		-1.76E+02	1.14E+03
RU-103	497.08	89.00	1.60E-01	1.60E-01	4.67E-02	7.50E-02
RU-106	621.84	9.80	8.78E-01	8.78E-01	-1.22E-01	4.03E-01
AG-108M	433.93	89.90	9.06E-02	9.06E-02	-1.87E-02	4.26E-02

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
AG-108M	614.37	90.40	1.30E-01	9.06E-02	-7.50E-02	6.14E-02
	722.95	90.50	1.24E-01		-8.05E-02	5.78E-02
+ CD-109	88.03	3.72	2.24E+00	2.24E+00	1.14E+00	1.10E+00
AG-110M	657.75	93.14	1.20E-01	1.20E-01	-5.94E-02	5.59E-02
	677.61	10.53	8.83E-01		3.43E-03	4.04E-01
	706.67	16.46	6.49E-01		-2.23E-01	3.00E-01
	763.93	21.98	4.64E-01		-1.18E-01	2.12E-01
	884.67	71.63	1.48E-01		1.48E-02	6.69E-02
	1384.27	23.94	4.70E-01		-2.44E-01	2.05E-01
CD-113M	263.70	0.02	3.52E+02	3.52E+02	-2.45E+01	1.69E+02
SN-113	255.12	1.93	4.63E+00	1.66E-01	-1.02E+00	2.22E+00
	391.69	64.90	1.66E-01		8.31E-02	7.88E-02
TE123M	159.00	84.10	8.85E-02	8.85E-02	2.57E-02	4.27E-02
SB-124	602.71	97.87	1.44E-01	1.44E-01	5.68E-02	6.76E-02
	645.85	7.26	1.70E+00		-1.20E-01	7.85E-01
	722.78	11.10	1.39E+00		-9.03E-01	6.49E-01
	1691.02	49.00	2.40E-01		-6.93E-02	9.84E-02
I-125	35.49	6.49	3.51E+00	3.51E+00	6.00E-01	1.69E+00
SB-125	176.33	6.89	8.93E-01	2.94E-01	-3.10E-02	4.29E-01
	427.89	29.33	2.94E-01		5.28E-02	1.38E-01
	463.38	10.35	9.67E-01		4.82E-01	4.58E-01
	600.56	17.80	5.78E-01		1.93E-01	2.71E-01
	635.90	11.32	8.91E-01		2.56E-01	4.14E-01
SB-126	414.70	83.30	4.64E-01	4.64E-01	-9.20E-02	2.19E-01
	666.33	99.60	5.07E-01		4.17E-02	2.37E-01
	685.00	99.60	5.34E-01		2.12E-01	2.49E-01
	720.50	53.80	9.31E-01		1.15E-01	4.32E-01
+ SN-126	87.57	37.00	2.17E-01	2.17E-01	1.10E-01	1.06E-01
SB-127	473.00	25.00	5.25E+01	4.09E+01	3.77E+00	2.47E+01
	685.20	35.70	4.09E+01		1.67E+01	1.89E+01
	783.80	14.70	9.77E+01		-2.24E+01	4.47E+01
I-129	29.78	57.00	5.18E-01	5.18E-01	8.00E-02	2.51E-01
	33.60	13.20	1.46E+00		-1.60E-01	7.04E-01
	39.58	7.52	1.63E+00		-8.13E-01	7.87E-01
I-131	284.30	6.05	1.43E+01	1.17E+00	-5.29E+00	6.85E+00
	364.48	81.20	1.17E+00		6.49E-01	5.56E-01
	636.97	7.26	1.52E+01		6.83E+00	7.08E+00
	722.89	1.80	6.84E+01		-4.44E+01	3.19E+01
TE-132	49.72	13.10	2.65E+02	3.20E+01	-1.75E+01	1.28E+02
	228.16	88.00	3.20E+01		2.01E+00	1.54E+01
BA-133	81.00	33.00	2.14E-01	2.10E-01	-8.00E-02	1.04E-01
	302.84	17.80	5.12E-01		7.59E-02	2.46E-01
	356.01	60.00	2.10E-01		3.17E-03	1.01E-01
I-133	529.87	86.30	4.61E+08	4.61E+03	-1.38E+07	2.15E+08
XE-133	81.00	38.00	7.28E+00	7.28E+00	-2.72E+00	3.54E+00
CS-134	563.23	8.38	1.05E+00	1.16E-01	-2.60E-01	4.86E-01
	569.32	15.43	6.49E-01		1.85E-01	3.04E-01
	604.70	97.60	1.16E-01		2.83E-02	5.43E-02
	795.84	85.40	1.41E-01		8.64E-02	6.55E-02
	801.93	8.73	1.14E+00		2.33E-02	5.22E-01
CS-135	268.24	16.00	5.43E-01	5.43E-01	8.78E-02	2.61E-01
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.40	28.60	1.00E+26		1.00E+26	1.00E+20

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
@ I-135	1678.03	9.54	1.00E+26	1.00E+26	1.00E+26	1.00E+20
CS-136	153.22	7.46	3.79E+00	3.85E-01	3.19E+00	1.83E+00
	163.85	4.61	5.64E+00		-2.39E+00	2.71E+00
	176.55	13.56	1.82E+00		-2.21E+00	8.74E-01
	273.65	12.66	2.98E+00		1.39E-01	1.43E+00
	340.57	48.50	9.49E-01		1.39E-01	4.57E-01
	818.50	99.70	3.85E-01		4.69E-02	1.74E-01
	1048.07	79.60	6.04E-01		-1.77E-02	2.74E-01
	1235.34	19.70	3.21E+00		2.49E-01	1.47E+00
CS-137	661.65	85.12	1.29E-01	1.29E-01	5.26E-03	6.05E-02
LA-138	788.74	34.00	3.05E-01	1.83E-01	2.75E-02	1.40E-01
	1435.80	66.00	1.83E-01		2.41E-02	8.12E-02
CE-139	165.85	80.35	9.09E-02	9.09E-02	2.94E-02	4.38E-02
BA-140	162.64	6.70	4.07E+00	1.38E+00	-4.79E-01	1.96E+00
	304.84	4.50	8.24E+00		1.28E+00	3.94E+00
	423.70	3.20	1.22E+01		5.16E+00	5.74E+00
	437.55	2.00	1.88E+01		7.27E-01	8.84E+00
	537.32	25.00	1.38E+00		-5.59E-02	6.36E-01
LA-140	328.77	20.50	1.92E+00	6.44E-01	1.28E+00	9.18E-01
	487.03	45.50	8.50E-01		2.88E-01	3.98E-01
	815.85	23.50	1.65E+00		-3.23E-02	7.43E-01
	1596.49	95.49	6.44E-01		1.70E-01	2.87E-01
CE-141	145.44	48.40	2.23E-01	2.23E-01	7.22E-02	1.07E-01
CE-143	57.36	11.80	7.75E+05	3.74E+05	-3.96E+05	3.76E+05
	293.26	42.00	3.74E+05		2.84E+04	1.82E+05
	664.55	5.20	2.64E+06		1.48E+06	1.24E+06
CE-144	133.54	10.80	5.49E-01	5.49E-01	-4.18E-01	2.64E-01
PM-144	476.78	42.00	2.47E-01	8.87E-02	9.25E-02	1.17E-01
	618.01	98.60	8.87E-02		-1.36E-02	4.08E-02
	696.49	99.49	1.21E-01		3.22E-02	5.66E-02
PM-145	36.85	21.70	6.79E-01	3.54E-01	1.75E-01	3.28E-01
	37.36	39.70	3.54E-01		-1.17E-01	1.71E-01
	42.30	15.10	7.19E-01		4.33E-02	3.48E-01
	72.40	2.31	3.77E+00		-1.02E+01	1.84E+00
PM-146	453.90	39.94	2.20E-01	2.20E-01	5.37E-02	1.04E-01
	735.90	14.01	7.52E-01		2.28E-01	3.48E-01
	747.13	13.10	7.77E-01		-9.13E-02	3.58E-01
ND-147	91.11	28.90	1.58E+00	1.58E+00	-1.50E+00	7.72E-01
	531.02	13.10	3.58E+00		-2.39E-01	1.66E+00
PM-149	285.90	3.10	1.59E+04	1.59E+04	1.16E+03	7.61E+03
EU-152	121.78	20.50	2.71E-01	2.71E-01	1.78E-03	1.31E-01
	244.69	5.40	1.86E+00		-5.56E-01	9.01E-01
	344.27	19.13	4.47E-01		-3.20E-02	2.13E-01
	778.89	9.20	1.11E+00		2.86E-01	5.09E-01
	964.01	10.40	1.12E+00		3.21E-02	5.15E-01
	1085.78	7.22	1.75E+00		-1.76E-01	7.99E-01
	1112.02	9.60	1.19E+00		-2.14E-02	5.36E-01
	1407.95	14.94	8.79E-01		3.29E-01	3.95E-01
GD-153	97.43	31.30	1.96E-01	1.96E-01	-3.15E-01	9.46E-02
	103.12	22.20	2.64E-01		-1.79E-01	1.27E-01
EU-154	123.07	40.50	1.42E-01	1.42E-01	6.62E-02	6.84E-02
	723.30	19.70	5.74E-01		-3.72E-01	2.67E-01
	873.19	11.50	7.71E-01		-2.37E-01	3.46E-01

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
EU-154	996.32	10.30	9.95E-01	1.42E-01	-4.23E-02	4.48E-01
	1004.76	17.90	6.38E-01		2.22E-01	2.91E-01
	1274.45	35.50	3.81E-01		-2.20E-01	1.73E-01
EU-155	86.50	30.90	2.64E-01	2.64E-01	2.14E-01	1.29E-01
	105.30	20.70	2.77E-01		4.38E-02	1.34E-01
EU-156	811.77	10.40	2.97E+00	2.97E+00	3.47E-01	1.34E+00
	1153.47	7.20	7.34E+00		4.34E+00	3.39E+00
	1230.71	8.90	5.29E+00		1.95E+00	2.41E+00
HO-166M	184.41	72.60	1.15E-01	1.15E-01	1.59E-01	5.59E-02
	280.45	29.60	2.81E-01		8.98E-02	1.35E-01
	410.94	11.10	7.68E-01		-2.96E-01	3.63E-01
	711.69	54.10	1.73E-01		-7.02E-02	7.97E-02
TM-171	66.72	0.14	5.79E+01	5.79E+01	-5.44E+01	2.82E+01
HF-172	81.75	4.52	1.54E+00	5.02E-01	-2.75E-01	7.49E-01
	125.81	11.30	5.02E-01		-1.92E-01	2.42E-01
LU-172	181.53	20.60	5.80E+00	3.41E+00	2.61E+00	2.80E+00
	810.06	16.63	9.39E+00		-2.43E+00	4.24E+00
	912.12	15.25	2.31E+01		4.00E+01	1.10E+01
	1093.66	62.50	3.41E+00		4.71E-02	1.55E+00
LU-173	100.72	5.24	1.10E+00	4.39E-01	2.58E-01	5.29E-01
	272.11	21.20	4.39E-01		1.20E-01	2.12E-01
HF-175	343.40	84.00	1.34E-01	1.34E-01	-9.54E-03	6.41E-02
LU-176	88.34	13.30	6.20E-01	8.58E-02	3.37E-01	3.03E-01
	201.83	86.00	8.63E-02		-1.65E-02	4.16E-02
	306.78	94.00	8.58E-02		5.12E-03	4.09E-02
TA-182	67.75	41.20	2.21E-01	2.21E-01	-1.14E-01	1.07E-01
	1121.30	34.90	6.54E-01		9.76E-01	3.08E-01
	1189.05	16.23	9.40E-01		1.15E-01	4.27E-01
	1221.41	26.98	6.23E-01		1.76E-01	2.85E-01
	1231.02	11.44	1.35E+00		1.52E-01	6.15E-01
IR-192	308.46	29.68	3.47E-01	2.09E-01	4.76E-02	1.66E-01
	460.07	48.10	2.09E-01		-4.30E-02	9.74E-02
HG-203	279.19	77.30	1.66E-01	1.66E-01	4.62E-02	7.96E-02
+ BI-207	569.67	* 97.72	9.20E-02	9.20E-02	9.79E-02	4.28E-02
	1063.62	74.90	1.53E-01		-1.79E-02	6.93E-02
+ TL-208	583.14	* 30.22	4.48E-01	5.65E-02	8.89E-01	2.13E-01
	860.37	4.48	2.59E+00		6.22E-01	1.20E+00
	2614.66	* 35.85	5.65E-02		9.82E-01	0.00E+00
BI-210M	262.00	45.00	1.80E-01	1.80E-01	-1.46E-02	8.65E-02
	300.00	23.00	4.08E-01		-1.84E+00	1.96E-01
+ PB-210	46.50	* 4.25	3.49E+00	3.49E+00	3.32E+00	1.71E+00
	404.84	2.90	3.15E+00	3.15E+00	2.47E-01	1.50E+00
PB-211	831.96	2.90	3.78E+00		-5.18E-01	1.74E+00
	727.17	11.80	1.08E+00	1.08E+00	5.32E-01	5.05E-01
+ PB-212	1620.62	2.75	3.18E+00		7.02E-01	1.32E+00
	238.63	* 44.60	3.42E-01	3.42E-01	1.22E+00	1.68E-01
+ BI-214	300.09	* 3.41	2.29E+00		1.51E+00	1.09E+00
	609.31	* 46.30	2.37E-01	1.01E-01	1.65E+00	1.11E-01
+ PB-214	1120.29	* 15.10	1.11E+00		1.89E+00	5.17E-01
	1764.49	* 15.80	1.01E-01		1.82E+00	0.00E+00
	2204.22	4.98	2.92E+00		1.32E+00	1.27E+00
+ PB-214	295.21	* 19.19	5.66E-01	3.36E-01	1.88E+00	2.74E-01
	351.92	* 37.19	3.36E-01		1.85E+00	1.63E-01

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
RN-219	401.80	6.50	1.33E+00	1.33E+00	2.20E-01	6.29E-01
RA-223	323.87	3.88	1.96E+00	1.96E+00	-3.20E-01	9.28E-01
RA-224	240.98	3.95	3.95E+00	3.95E+00	1.86E+01	1.94E+00
RA-225	40.00	31.00	1.42E+00	1.42E+00	-7.07E-01	6.84E-01
+ RA-226	186.21 *	3.28	3.08E+00	3.08E+00	3.18E+00	1.50E+00
TH-227	50.10	8.40	1.11E+00	1.06E+00	-7.30E-02	5.37E-01
	236.00	11.50	1.06E+00		7.99E-01	5.16E-01
	256.20	6.30	1.21E+00		-5.04E-01	5.79E-01
+ AC-228	338.32 *	11.40	8.04E-01	5.70E-01	1.10E+00	3.85E-01
	911.07 *	27.70	5.70E-01		1.50E+00	2.68E-01
	969.11 *	16.60	9.25E-01		1.19E+00	4.33E-01
TH-230	48.44	16.90	6.52E-01	6.52E-01	9.66E-01	3.18E-01
	62.85	4.60	1.88E+00		2.52E+00	9.16E-01
	67.67	0.37	2.08E+01		-1.07E+01	1.01E+01
PA-231	283.67	1.60	4.93E+00	3.94E+00	-1.82E+00	2.36E+00
	302.67	2.30	3.94E+00		5.84E-01	1.89E+00
TH-231	25.64	14.70	3.84E+00	1.10E+00	-5.53E-01	1.86E+00
	84.21	6.40	1.10E+00		1.39E-01	5.34E-01
PA-233	311.98	38.60	4.08E-01	4.08E-01	-9.53E-02	1.94E-01
PA-234	131.20	20.40	2.76E-01	2.76E-01	-9.99E-03	1.33E-01
	733.99	8.80	1.14E+00		-6.03E-01	5.26E-01
	946.00	12.00	9.11E-01		-4.91E-01	4.15E-01
PA-234M	1001.03	0.92	1.16E+01	1.16E+01	-2.39E+00	5.27E+00
TH-234	63.29	3.80	2.24E+00	2.24E+00	1.43E+00	1.09E+00
U-235	143.76	10.50	5.49E-01	5.49E-01	-1.53E-01	2.65E-01
	163.35	4.70	1.28E+00		-5.42E-01	6.15E-01
	265.31	4.70	1.52E+00		-1.89E+00	7.32E-01
NP-237	86.50	12.60	6.40E-01	6.40E-01	5.18E-01	3.13E-01
NP-239	106.10	22.70	8.92E+02	8.92E+02	-3.72E+00	4.31E+02
	228.13	10.70	2.54E+03		1.60E+02	1.22E+03
	277.60	14.10	2.17E+03		1.39E+03	1.04E+03
AM-241	59.54	35.90	2.17E-01	2.17E-01	-1.88E-02	1.06E-01
+ AM-243	74.67 *	66.00	1.84E-01	1.84E-01	4.11E-01	9.08E-02
CM-243	209.75	3.29	2.39E+00	6.15E-01	1.15E+00	1.15E+00
	228.14	10.60	7.21E-01		4.54E-02	3.47E-01
	277.60	14.00	6.15E-01		3.93E-01	2.96E-01

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = MDA value not calculated

@ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

Analysis Report for 1603102-04

SEDIMENT 2016-03-16A

DATA REVIEW COMMENTS REPORT

Creation Date**Comment****User**

No Data Review Comments Entered.

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: SEDIMENT 2016-03-16A

Elapsed Live time: 3600

Elapsed Real Time: 3613

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	0	0	0	0
9:	1	155	149	118	94	109	73	98
17:	71	79	67	60	62	66	69	55
25:	70	62	61	67	63	57	54	55
33:	54	64	50	59	61	53	55	43
41:	65	58	64	47	52	71	171	131
49:	59	58	67	64	72	80	65	69
57:	48	71	77	80	88	82	105	156
65:	106	76	93	98	112	89	103	86
73:	81	115	259	283	298	407	127	79
81:	80	81	80	96	116	80	115	184
89:	111	106	120	87	161	173	89	62
97:	62	55	53	59	59	51	53	49
105:	49	74	60	54	54	68	57	49
113:	62	50	45	66	42	39	44	46
121:	51	56	49	47	60	37	54	42
129:	53	56	49	41	43	47	52	47
137:	51	70	55	48	50	44	46	44
145:	59	39	56	47	42	45	60	50
153:	43	55	73	38	46	65	44	46
161:	50	42	37	37	55	46	47	54
169:	44	47	37	39	50	49	38	40
177:	38	33	28	47	57	48	33	55
185:	58	103	117	48	38	42	47	40
193:	40	59	44	33	42	43	45	45
201:	34	28	35	32	32	36	34	29
209:	38	61	36	36	32	30	33	38
217:	38	48	43	33	37	36	30	31
225:	35	30	31	33	20	33	38	36
233:	26	28	36	39	37	75	305	188
241:	63	119	89	38	31	24	24	19
249:	35	24	26	27	25	20	20	26
257:	35	27	28	32	33	30	25	27
265:	24	24	32	28	35	40	38	40
273:	27	21	29	27	33	39	23	27
281:	26	21	23	28	16	23	27	28
289:	28	19	30	17	18	29	133	189
297:	60	16	13	39	39	23	24	20
305:	27	24	17	23	24	15	20	21
313:	18	15	20	26	17	23	17	21
321:	16	10	28	12	11	26	17	25
329:	33	21	21	14	22	18	15	13
337:	15	43	69	23	22	22	18	26
345:	20	9	20	16	21	18	55	224
353:	167	45	16	14	13	15	19	14
361:	21	18	16	19	14	22	19	20

369: 10 12 14 17 21 14 14 14

Sample Title: SEDIMENT 2016-03-16A

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	21	14	21	20	16	16	18	12
385:	18	14	16	19	21	16	16	23
393:	19	18	12	11	12	5	11	12
401:	16	25	16	14	13	19	18	14
409:	21	15	11	12	15	12	14	18
417:	10	9	17	13	12	15	15	16
425:	15	14	10	8	8	19	17	13
433:	12	12	9	6	13	10	22	12
441:	13	18	10	9	6	6	10	10
449:	3	17	9	9	16	15	13	13
457:	12	13	10	15	9	15	26	26
465:	8	9	9	15	5	10	8	19
473:	9	13	8	16	22	18	16	10
481:	12	9	8	9	14	13	12	8
489:	8	10	11	6	5	13	11	8
497:	13	11	10	8	10	12	10	4
505:	10	12	12	10	14	25	49	33
513:	14	7	8	9	13	13	8	13
521:	10	8	10	6	17	9	17	12
529:	9	13	4	5	8	5	8	4
537:	12	6	6	7	6	9	7	7
545:	9	7	13	9	8	8	6	6
553:	14	8	10	7	11	13	9	7
561:	6	6	12	9	12	4	4	12
569:	19	15	10	9	9	5	7	13
577:	8	6	12	6	8	14	68	74
585:	10	8	6	9	10	3	11	7
593:	12	8	11	4	9	12	5	7
601:	13	13	11	10	12	7	9	22
609:	141	142	45	6	8	12	9	7
617:	7	8	7	5	1	4	7	9
625:	9	10	7	4	7	10	6	11
633:	8	9	7	7	14	6	10	10
641:	2	6	12	4	4	6	6	10
649:	6	10	9	7	5	8	10	7
657:	12	12	6	6	10	15	16	7
665:	11	13	3	12	4	11	3	4
673:	3	9	8	3	6	8	8	3
681:	4	9	2	7	5	9	11	9
689:	9	5	8	7	10	10	16	11
697:	9	5	9	7	11	9	10	8
705:	7	7	11	9	2	6	6	11
713:	5	3	11	8	5	8	9	9
721:	6	11	8	4	7	18	19	14
729:	9	10	9	6	10	7	4	3
737:	9	9	10	4	5	7	11	7
745:	8	5	8	4	6	9	5	7
753:	4	8	8	6	8	4	6	6
761:	5	3	8	9	3	7	4	15
769:	19	8	10	5	12	7	6	8
777:	6	6	4	7	7	6	3	5
785:	4	6	8	8	7	3	7	6
793:	4	12	17	9	5	5	6	5

801: 3 7 6 3 8 6 4 5

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Channel	-----	-----	-----	-----	-----	-----	-----
809:	1	8	3	4	5	2	6
817:	4	7	2	7	2	3	5
825:	4	8	4	8	11	5	6
833:	5	8	4	7	9	6	6
841:	2	10	2	6	11	5	7
849:	6	5	3	6	5	6	5
857:	7	7	5	6	15	6	3
865:	6	6	5	3	5	3	3
873:	3	4	6	1	5	6	5
881:	5	4	5	8	5	3	2
889:	4	8	7	6	3	6	2
897:	3	5	6	2	1	3	5
905:	5	3	6	4	7	24	51
913:	4	6	7	8	4	1	4
921:	9	4	4	4	3	8	4
929:	4	4	7	7	11	12	7
937:	3	6	3	6	5	6	6
945:	3	7	3	3	8	9	9
953:	6	5	5	6	6	10	3
961:	5	3	7	9	6	6	4
969:	41	16	11	5	4	5	6
977:	5	3	4	5	3	6	6
985:	5	6	7	3	4	4	7
993:	2	6	2	5	5	6	2
1001:	3	3	8	5	7	4	3
1009:	4	3	4	10	3	5	3
1017:	5	3	7	6	7	1	6
1025:	8	1	8	3	4	2	7
1033:	4	5	6	3	4	7	3
1041:	6	4	8	6	5	9	0
1049:	8	2	4	5	1	4	1
1057:	7	4	5	3	7	4	3
1065:	5	5	8	3	6	3	6
1073:	2	9	6	2	1	2	3
1081:	5	5	6	4	6	7	6
1089:	4	7	6	3	2	7	4
1097:	7	3	4	2	4	3	10
1105:	7	6	6	2	5	7	4
1113:	2	6	3	7	2	6	17
1121:	19	4	6	6	2	2	3
1129:	2	4	1	6	6	1	4
1137:	2	4	10	5	5	3	3
1145:	3	4	4	4	3	5	6
1153:	6	13	9	6	4	5	0
1161:	2	12	7	2	7	3	5
1169:	10	2	3	4	6	8	4
1177:	5	6	4	1	4	7	5
1185:	5	1	5	4	3	9	3
1193:	2	4	3	8	5	2	5
1201:	9	3	7	1	5	6	1
1209:	4	6	3	5	6	5	2
1217:	11	5	6	3	6	6	6
1225:	4	2	7	4	3	3	7

1233: 3 6 1 4 8 13 9 5

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Channel	-----	-----	-----	-----	-----	-----	-----	-----
1241:	5	4	0	4	5	3	1	1
1249:	5	5	4	4	7	3	4	3
1257:	4	3	6	2	5	2	4	2
1265:	3	6	2	3	2	4	4	5
1273:	2	2	2	8	2	4	6	10
1281:	4	4	7	10	2	3	3	3
1289:	5	3	1	5	3	0	6	4
1297:	4	2	3	5	3	3	8	4
1305:	1	2	2	2	3	6	1	2
1313:	3	5	2	2	1	1	1	3
1321:	4	1	5	2	0	2	2	5
1329:	3	2	5	7	5	2	2	1
1337:	7	2	2	3	3	2	3	0
1345:	1	1	1	5	0	3	4	0
1353:	2	1	1	0	5	3	3	1
1361:	4	3	1	3	2	5	2	2
1369:	2	0	5	2	1	2	2	2
1377:	7	4	3	1	1	3	0	3
1385:	2	1	2	3	3	2	0	1
1393:	1	2	0	1	0	2	2	1
1401:	6	2	1	3	0	4	5	6
1409:	1	2	5	0	2	2	5	2
1417:	0	1	4	0	2	3	2	0
1425:	3	3	1	4	4	1	1	1
1433:	1	4	3	7	1	1	2	0
1441:	3	3	2	2	3	1	0	1
1449:	1	2	4	1	2	1	1	1
1457:	3	6	40	143	111	33	1	1
1465:	1	0	0	1	0	4	3	0
1473:	3	2	2	2	2	1	2	2
1481:	2	3	6	1	1	0	1	3
1489:	2	2	3	1	1	1	4	1
1497:	2	4	2	0	1	1	1	1
1505:	3	1	2	3	4	5	1	3
1513:	2	1	2	3	1	1	1	0
1521:	2	2	1	2	3	3	1	1
1529:	7	3	0	5	1	1	2	0
1537:	6	0	3	2	0	1	3	3
1545:	0	2	0	0	4	0	0	2
1553:	3	1	0	0	2	2	0	1
1561:	0	1	0	1	2	1	3	0
1569:	0	2	0	1	2	0	1	1
1577:	1	1	0	1	2	0	1	1
1585:	0	4	2	3	2	1	6	3
1593:	5	5	2	1	2	2	3	0
1601:	2	0	1	0	0	4	3	1
1609:	0	2	1	1	0	1	0	0
1617:	0	0	2	3	0	2	1	0
1625:	0	1	1	0	3	4	3	0
1633:	2	1	0	1	1	3	1	0
1641:	0	0	0	0	1	0	2	1
1649:	1	0	0	1	0	1	1	2
1657:	0	2	4	2	0	0	1	1

1665: 0 1 2 1 0 2 1 0

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Channel	-----	-----	-----	-----	-----	-----	-----	-----
1673:	2	0	0	2	0	2	0	4
1681:	0	3	1	0	2	0	0	0
1689:	1	1	0	1	3	1	0	4
1697:	1	1	0	1	0	2	1	1
1705:	0	2	0	0	0	1	1	0
1713:	0	2	0	1	0	1	0	0
1721:	0	3	0	0	1	4	0	6
1729:	8	3	1	1	1	1	0	0
1737:	1	1	0	0	1	0	1	1
1745:	0	2	2	0	2	0	0	0
1753:	1	0	0	0	1	0	0	2
1761:	0	4	11	18	11	3	0	0
1769:	0	0	0	0	1	0	0	0
1777:	0	0	0	3	1	1	2	0
1785:	0	0	0	0	0	0	2	0
1793:	1	1	0	0	0	0	1	0
1801:	2	0	1	0	0	1	0	0
1809:	1	0	0	1	1	1	1	0
1817:	0	1	1	0	0	0	0	0
1825:	0	0	0	1	0	1	1	0
1833:	4	1	1	1	1	1	0	3
1841:	2	1	0	0	0	3	3	1
1849:	0	0	2	1	0	1	1	1
1857:	2	1	0	2	1	1	2	1
1865:	1	1	1	1	1	1	0	0
1873:	0	0	0	2	0	0	0	0
1881:	1	1	1	1	0	0	0	0
1889:	3	0	0	0	1	1	2	0
1897:	2	1	0	0	0	1	4	0
1905:	0	1	1	1	2	0	0	1
1913:	0	0	3	0	0	0	1	0
1921:	1	3	1	1	2	0	1	0
1929:	1	2	0	1	1	0	1	1
1937:	0	0	0	0	2	0	1	0
1945:	2	0	0	0	0	1	1	1
1953:	0	0	3	0	1	3	3	4
1961:	1	1	2	0	1	0	1	1
1969:	0	1	0	1	0	0	0	3
1977:	0	0	2	1	2	0	2	0
1985:	0	3	3	0	0	0	2	1
1993:	2	0	1	0	1	2	0	0
2001:	0	1	0	0	0	3	0	0
2009:	0	1	0	1	0	1	1	1
2017:	1	0	1	1	2	1	0	1
2025:	0	2	1	2	0	1	0	0
2033:	0	1	0	0	0	2	2	3
2041:	1	0	1	1	2	1	0	0
2049:	0	1	0	0	0	0	1	0
2057:	2	1	0	1	1	0	0	0
2065:	1	1	2	1	0	1	1	0
2073:	0	0	1	1	0	0	1	0
2081:	2	0	0	1	1	0	2	0
2089:	2	0	0	0	0	1	0	2

2097: 1 0 0 2 0 3 2 1

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Channel	-----	-----	-----	-----	-----	-----	-----	-----
2105:	1	1	2	0	1	0	0	1
2113:	2	2	1	3	0	2	1	2
2121:	0	1	1	2	0	0	0	1
2129:	1	0	1	1	1	0	2	0
2137:	0	1	1	0	4	0	0	0
2145:	1	2	1	1	2	0	0	0
2153:	1	2	0	0	0	0	0	1
2161:	0	0	0	1	0	1	0	0
2169:	0	1	0	0	0	2	1	2
2177:	1	0	1	1	1	0	0	0
2185:	0	3	0	1	0	1	1	0
2193:	2	0	0	0	3	1	0	1
2201:	0	2	6	5	1	1	0	0
2209:	0	0	1	0	0	2	1	1
2217:	0	0	3	0	1	0	0	1
2225:	0	0	0	0	1	0	0	0
2233:	0	0	0	0	0	2	0	0
2241:	0	1	2	1	1	0	0	0
2249:	0	0	1	1	0	0	2	0
2257:	0	0	2	0	0	1	0	0
2265:	0	4	1	0	1	0	1	0
2273:	1	1	0	1	0	1	0	1
2281:	0	0	0	0	0	1	0	2
2289:	0	0	0	2	2	2	0	1
2297:	0	2	1	0	0	0	2	1
2305:	0	0	0	2	1	1	0	1
2313:	0	0	1	0	1	1	0	0
2321:	0	0	1	0	2	0	0	1
2329:	3	0	1	0	0	0	0	1
2337:	0	1	1	1	0	0	1	1
2345:	2	0	0	1	1	0	0	0
2353:	0	0	1	0	2	0	2	0
2361:	2	1	1	0	1	0	1	1
2369:	0	0	1	3	0	1	0	1
2377:	1	2	1	1	2	1	0	0
2385:	0	0	0	2	0	1	0	0
2393:	1	0	0	0	2	1	1	1
2401:	0	0	0	0	0	0	0	0
2409:	0	1	0	0	0	0	1	0
2417:	0	1	0	0	3	0	1	0
2425:	0	1	3	0	1	0	0	0
2433:	1	1	1	2	1	0	3	0
2441:	0	0	1	0	0	2	4	1
2449:	1	0	1	2	0	2	0	0
2457:	1	0	1	0	0	0	0	0
2465:	1	0	1	1	2	2	0	0
2473:	1	1	0	0	0	1	0	1
2481:	0	0	0	1	1	0	0	1
2489:	0	0	0	0	1	0	1	2
2497:	0	0	0	1	0	0	1	0
2505:	1	1	1	1	0	0	0	2
2513:	0	0	1	1	0	0	0	0
2521:	1	0	1	1	0	0	0	0

2529: 0 1 0 0 0 1 0 0

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Channel	-----	-----	-----	-----	-----	-----	-----	-----
2537:	0	0	0	0	0	0	0	0
2545:	0	0	0	1	0	0	1	0
2553:	0	0	0	0	0	0	1	0
2561:	1	0	0	1	1	1	0	0
2569:	0	1	0	0	1	1	1	0
2577:	0	0	0	0	0	1	0	0
2585:	0	0	0	1	0	0	0	1
2593:	1	0	0	0	0	0	0	0
2601:	1	0	0	0	0	0	0	1
2609:	1	0	2	5	18	8	10	2
2617:	0	0	0	0	0	0	1	1
2625:	1	0	0	0	0	1	0	0
2633:	0	1	0	0	0	0	0	0
2641:	1	0	1	1	1	0	0	1
2649:	0	1	0	0	0	1	0	0
2657:	0	0	0	0	0	0	0	0
2665:	0	1	0	0	0	1	0	0
2673:	0	0	0	0	0	0	1	0
2681:	1	1	0	1	0	0	0	1
2689:	0	1	0	1	0	0	0	0
2697:	0	1	0	0	0	0	0	0
2705:	0	1	0	0	0	0	0	1
2713:	0	2	0	0	1	0	0	0
2721:	0	0	0	0	0	0	0	0
2729:	0	1	0	0	0	0	0	0
2737:	1	0	0	0	0	0	0	0
2745:	0	0	0	0	1	0	0	1
2753:	0	0	0	0	1	0	0	1
2761:	0	0	0	0	0	0	0	1
2769:	0	0	0	0	1	0	1	0
2777:	0	0	1	2	0	0	1	0
2785:	0	1	1	0	1	0	0	0
2793:	0	0	0	1	0	0	0	0
2801:	0	0	0	0	0	0	0	0
2809:	0	0	0	0	0	0	0	0
2817:	1	1	0	0	0	0	0	0
2825:	0	0	0	0	0	0	2	0
2833:	0	0	1	1	0	0	1	0
2841:	1	0	0	1	0	0	1	0
2849:	1	0	0	0	0	0	0	0
2857:	0	0	0	0	0	0	1	0
2865:	1	0	0	0	0	0	1	0
2873:	1	0	1	0	1	0	0	0
2881:	0	0	0	0	0	1	1	0
2889:	1	0	0	0	0	0	0	0
2897:	0	0	0	0	0	0	0	2
2905:	0	0	0	0	0	0	0	0
2913:	0	0	0	0	0	0	0	0
2921:	0	1	1	0	0	0	1	0
2929:	0	0	1	0	0	1	0	0
2937:	1	0	0	0	0	0	0	0
2945:	0	0	0	0	0	0	0	0
2953:	0	0	0	1	0	0	0	0

2961:

1

2

0

0

0

0

0

0

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Channel	-----	-----	-----	-----	-----	-----	-----	-----
2969:	1	0	0	1	0	0	0	0
2977:	0	1	0	1	0	1	0	0
2985:	0	2	0	0	0	0	0	0
2993:	1	0	1	0	0	0	0	0
3001:	0	0	0	0	1	0	0	0
3009:	1	0	1	0	0	0	0	0
3017:	0	0	0	0	0	0	0	0
3025:	0	1	0	0	0	0	0	1
3033:	0	0	1	0	1	0	0	0
3041:	1	0	0	0	0	0	0	0
3049:	0	0	0	1	0	0	1	0
3057:	0	0	0	0	0	0	0	1
3065:	2	0	0	0	0	0	0	0
3073:	0	0	0	0	0	0	0	0
3081:	0	0	0	0	0	0	0	0
3089:	0	1	1	0	0	0	0	0
3097:	0	0	0	0	0	0	0	0
3105:	0	2	0	1	0	1	0	1
3113:	0	0	0	0	1	0	0	1
3121:	0	0	0	0	1	0	1	0
3129:	0	0	1	1	0	0	1	0
3137:	0	1	0	0	0	0	0	0
3145:	0	1	0	0	0	0	0	0
3153:	0	0	0	1	0	0	0	0
3161:	0	1	0	0	0	0	0	0
3169:	0	0	0	1	0	1	0	0
3177:	0	0	0	0	0	0	0	0
3185:	0	0	0	0	0	0	0	0
3193:	0	0	0	0	0	0	0	0
3201:	0	0	0	0	0	0	0	1
3209:	0	2	0	0	0	0	0	1
3217:	1	0	0	0	1	0	0	0
3225:	1	0	0	0	0	0	0	0
3233:	0	0	0	0	0	0	0	0
3241:	0	0	0	0	0	0	0	0
3249:	0	0	0	1	0	0	0	0
3257:	1	0	0	0	0	0	0	0
3265:	0	0	0	1	0	1	0	0
3273:	1	0	0	0	0	0	0	1
3281:	0	0	1	0	0	0	0	0
3289:	0	0	0	1	0	0	0	2
3297:	0	0	0	0	0	0	0	0
3305:	0	1	0	0	0	0	0	0
3313:	0	0	0	0	0	0	0	0
3321:	1	0	0	0	0	0	0	2
3329:	0	0	0	0	0	0	0	0
3337:	0	0	0	1	0	0	0	0
3345:	0	0	1	0	0	0	1	0
3353:	0	0	0	0	0	0	0	0
3361:	0	0	0	0	0	0	0	0
3369:	0	0	1	1	0	0	0	0
3377:	0	0	0	0	0	0	0	0
3385:	0	0	0	0	0	0	0	0

3393: 0 0 0 0 0 0 0 0

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Channel	-----	-----	-----	-----	-----	-----	-----	-----
3401:	0	0	0	0	0	0	0	0
3409:	0	0	0	0	0	0	0	0
3417:	0	0	0	0	0	0	0	1
3425:	1	0	0	0	1	1	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0	1
3449:	0	0	1	0	0	0	0	0
3457:	0	0	0	0	0	0	1	0
3465:	0	1	0	0	0	0	0	1
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	0	0	1	0
3489:	0	0	0	0	0	1	0	0
3497:	0	0	0	0	1	0	0	0
3505:	0	1	0	1	0	0	0	0
3513:	0	0	1	0	0	0	1	0
3521:	0	0	0	0	0	0	0	0
3529:	0	0	0	0	0	0	0	0
3537:	0	0	0	1	0	0	0	0
3545:	0	0	0	0	0	0	0	0
3553:	0	0	0	0	0	0	0	0
3561:	0	0	0	0	0	0	0	0
3569:	0	0	0	0	0	0	0	0
3577:	0	0	0	0	0	1	0	0
3585:	0	0	0	0	0	0	0	0
3593:	0	0	0	0	0	0	0	0
3601:	0	0	0	0	0	0	0	0
3609:	0	0	1	0	0	0	0	0
3617:	0	0	0	0	0	0	0	0
3625:	0	0	1	0	0	0	0	0
3633:	0	0	0	0	0	0	0	0
3641:	0	0	0	0	1	0	0	0
3649:	0	0	0	0	0	0	1	0
3657:	1	0	0	0	0	0	0	1
3665:	0	2	0	0	0	0	0	0
3673:	0	0	1	0	0	0	0	0
3681:	1	0	1	0	0	0	0	1
3689:	0	0	0	0	0	0	0	0
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	0	1	1	0	0
3713:	0	0	0	0	0	1	1	0
3721:	1	0	0	0	0	0	1	0
3729:	1	0	0	0	0	0	0	0
3737:	0	0	1	0	0	0	0	1
3745:	1	0	1	0	0	0	0	0
3753:	0	0	0	0	0	0	0	0
3761:	0	1	0	0	0	0	0	0
3769:	0	0	1	0	0	0	0	0
3777:	1	0	0	0	0	0	0	0
3785:	0	0	1	0	0	0	0	0
3793:	0	0	0	0	1	0	0	0
3801:	0	0	0	0	0	0	0	0
3809:	1	0	0	0	0	0	1	0
3817:	0	0	0	0	0	1	1	0

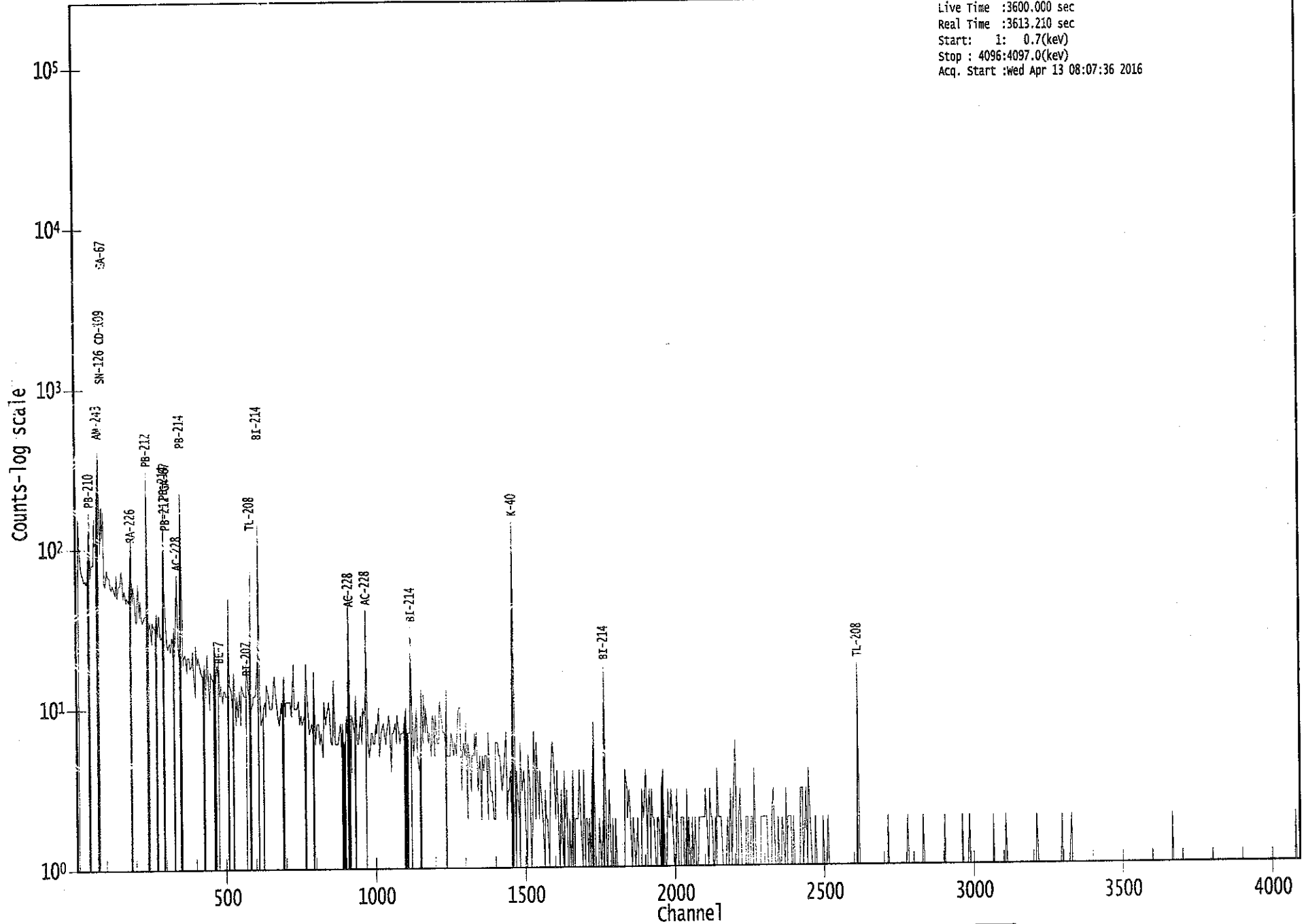
3825: 0 0 0 1 0 0 0 0

Sample Title: SEDIMENT 2016-03-16A

Channel	-----	-----	-----	-----	-----	-----	-----
3833:	0	0	0	0	0	0	0
3841:	0	0	0	0	0	1	0
3849:	0	0	0	0	0	0	0
3857:	0	0	0	0	1	0	0
3865:	0	0	0	0	0	0	0
3873:	0	1	0	0	0	0	0
3881:	0	0	1	0	0	1	0
3889:	0	0	0	0	0	0	0
3897:	1	0	0	0	0	1	0
3905:	0	0	0	0	1	1	0
3913:	0	0	0	0	1	0	0
3921:	0	1	0	1	0	0	0
3929:	0	0	1	0	0	0	0
3937:	0	0	0	0	1	0	0
3945:	0	0	0	0	0	0	0
3953:	0	1	0	0	0	0	0
3961:	0	0	0	0	0	0	0
3969:	0	0	0	0	0	0	0
3977:	0	1	0	1	0	0	0
3985:	0	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	0
4017:	0	0	0	0	0	0	0
4025:	0	0	0	0	0	0	0
4033:	0	0	0	0	0	0	1
4041:	0	0	0	0	0	0	1
4049:	1	0	0	0	0	0	0
4057:	0	1	0	0	0	0	0
4065:	0	0	0	0	0	0	0
4073:	0	0	0	1	0	2	0
4081:	0	0	0	0	0	0	0
4089:	0	0	0	0	0	0	0

0000035696.CNF

Live Time : 3600.000 sec
 Real Time : 3613.210 sec
 Start: 1: 0.7(kev)
 Stop : 4096:4097.0(kev)
 Acq. Start : wed Apr 13 08:07:36 2016



Analysis Report for 1603102-05
SEDIMENT 2016-03-16B

✓
4/13

GAMMA SPECTRUM ANALYSIS

Sample Identification : 1603102-05
Sample Description : SEDIMENT 2016-03-16B
Sample Type : SOIL

Sample Size : 5.413E+02 grams
Facility : Countroom

Sample Taken On : 3/16/2016 1:45:27PM
Acquisition Started : 4/13/2016 9:12:11AM

Procedure : GAS-1402 pCi
Operator : Administrator
Detector Name : GE3
Geometry : GAS-1402
Live Time : 3600.0 seconds
Real Time : 3611.8 seconds

Dead Time : 0.33 %

Peak Locate Threshold : 2.50
Peak Locate Range (in channels) : 1 - 4096
Peak Area Range (in channels) : 9 - 4096
Identification Energy Tolerance : 1.000 keV

Energy Calibration Used Done On : 10/25/2014
Efficiency Calibration Used Done On : 10/25/2014
Efficiency Calibration Description :

Sample Number : 35701

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AG
4/13/16

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

PEAK LOCATE REPORT

Peak Locate Performed on : 4/13/2016 10:12:24AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	46.96	47.19	0.0000	0.00
2	74.94	75.15	0.0000	0.00
3	77.63	77.85	0.0000	0.00
4	93.14	93.34	0.0000	0.00
5	99.10	99.30	0.0000	0.00
6	105.27	105.47	0.0000	0.00
7	143.61	143.78	0.0000	0.00
8	186.10	186.25	0.0000	0.00
9	211.75	211.89	0.0000	0.00
10	238.90	239.03	0.0000	0.00
11	241.86	241.99	0.0000	0.00
12	270.57	270.68	0.0000	0.00
13	295.68	295.78	0.0000	0.00
14	309.46	309.55	0.0000	0.00
15	338.74	338.82	0.0000	0.00
16	342.11	342.18	0.0000	0.00
17	348.34	348.41	0.0000	0.00
18	352.37	352.44	0.0000	0.00
19	464.39	464.40	0.0000	0.00
20	477.97	477.98	0.0000	0.00
21	511.71	511.70	0.0000	0.00
22	549.41	549.39	0.0000	0.00
23	579.04	579.00	0.0000	0.00
24	583.85	583.80	0.0000	0.00
25	609.72	609.66	0.0000	0.00
26	698.53	698.43	0.0000	0.00
27	702.53	702.43	0.0000	0.00
28	710.67	710.57	0.0000	0.00
29	728.02	727.91	0.0000	0.00
30	734.74	734.63	0.0000	0.00
31	768.74	768.61	0.0000	0.00
32	795.34	795.20	0.0000	0.00
33	851.90	851.73	0.0000	0.00
34	857.83	857.66	0.0000	0.00
35	861.01	860.84	0.0000	0.00
36	911.61	911.41	0.0000	0.00
37	969.44	969.22	0.0000	0.00
38	973.00	972.78	0.0000	0.00
39	976.44	976.22	0.0000	0.00
40	984.30	984.07	0.0000	0.00
41	1003.36	1003.12	0.0000	0.00
42	1098.37	1098.10	0.0000	0.00

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
43	1120.29	1120.01	0.0000	0.00
44	1126.05	1125.76	0.0000	0.00
45	1148.36	1148.06	0.0000	0.00
46	1155.50	1155.20	0.0000	0.00
47	1160.24	1159.94	0.0000	0.00
48	1232.21	1231.87	0.0000	0.00
49	1237.82	1237.49	0.0000	0.00
50	1282.37	1282.02	0.0000	0.00
51	1381.53	1381.14	0.0000	0.00
52	1460.80	1460.38	0.0000	0.00
53	1496.40	1495.97	0.0000	0.00
54	1510.05	1509.61	0.0000	0.00
55	1590.33	1589.86	0.0000	0.00
56	1629.99	1629.51	0.0000	0.00
57	1764.39	1763.86	0.0000	0.00
58	1776.37	1775.83	0.0000	0.00
59	1845.91	1845.35	0.0000	0.00
60	1985.77	1985.17	0.0000	0.00
61	2118.89	2118.25	0.0000	0.00
62	2203.33	2202.66	0.0000	0.00
63	2217.47	2216.80	0.0000	0.00
64	2283.78	2283.09	0.0000	0.00
65	2614.56	2613.58	0.0000	0.00

? = Adjacent peak noted

Errors quoted at 2.000sigma

Analysis Report for 1603102-05

SEDIMENT 2013-03-16B

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/13/2016 10:12:24AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	46.96	44 -	49	47.19	1.63E+02	62.36	6.43E+02	1.70
M	2	74.94	72 -	81	75.15	2.39E+02	77.39	9.42E+02	1.66
m	3	77.63	72 -	81	77.85	4.97E+02	84.36	9.22E+02	1.67
	4	93.14	90 -	97	93.34	3.61E+02	90.73	1.04E+03	2.15
	5	99.10	98 -	103	99.30	4.69E+01	55.05	5.80E+02	1.55
	6	105.27	103 -	108	105.47	6.93E+01	56.44	5.85E+02	2.82
	7	143.61	140 -	147	143.78	7.87E+01	68.93	7.39E+02	2.55
	8	186.10	182 -	190	186.25	1.89E+02	72.68	6.95E+02	2.07
	9	211.75	205 -	220	211.89	1.05E+02	101.67	9.89E+02	7.68
M	10	238.90	234 -	246	239.03	4.87E+02	60.88	3.10E+02	1.89
m	11	241.86	234 -	246	241.99	1.40E+02	62.37	3.41E+02	1.89
	12	270.57	267 -	273	270.68	6.83E+01	44.16	3.05E+02	2.14
	13	295.68	292 -	298	295.78	1.83E+02	48.57	3.36E+02	1.58
	14	309.46	306 -	314	309.55	4.19E+01	42.87	2.58E+02	2.05
M	15	338.74	336 -	345	338.82	1.15E+02	34.37	1.55E+02	1.99
m	16	342.11	336 -	345	342.18	3.81E+01	33.84	1.25E+02	1.99
M	17	348.34	346 -	357	348.41	2.93E+01	20.88	7.44E+01	2.06
m	18	352.37	346 -	357	352.44	3.76E+02	44.51	1.15E+02	1.75
	19	464.39	460 -	472	464.40	6.23E+01	47.91	2.41E+02	4.21
	20	477.97	474 -	482	477.98	5.00E+01	35.40	1.62E+02	1.56
	21	511.71	506 -	518	511.70	1.58E+02	42.18	1.30E+02	2.32
	22	549.41	546 -	552	549.39	3.10E+01	22.56	7.00E+01	1.16
M	23	579.04	578 -	590	579.00	1.28E+01	10.30	2.78E+01	1.98
m	24	583.85	578 -	590	583.80	1.21E+02	32.29	8.98E+01	2.18
	25	609.72	606 -	615	609.66	2.34E+02	44.61	1.52E+02	1.86
M	26	698.53	696 -	713	698.43	2.62E+01	16.11	3.15E+01	2.49
m	27	702.53	696 -	713	702.43	2.47E+01	21.15	4.81E+01	2.49
m	28	710.67	696 -	713	710.57	1.94E+01	18.85	5.41E+01	2.49
	29	728.02	723 -	731	727.91	3.31E+01	27.74	9.59E+01	3.23
	30	734.74	732 -	737	734.63	1.63E+01	17.06	4.55E+01	2.42
	31	768.74	765 -	772	768.61	2.41E+01	27.57	1.08E+02	1.91
	32	795.34	790 -	799	795.20	3.10E+01	26.78	8.40E+01	5.08
	33	851.90	849 -	855	851.73	1.65E+01	17.53	4.10E+01	2.51
M	34	857.83	856 -	865	857.66	1.21E+01	11.49	1.74E+01	2.67
m	35	861.01	856 -	865	860.84	3.37E+01	21.87	4.70E+01	2.85
	36	911.61	907 -	915	911.41	9.05E+01	27.78	6.30E+01	1.75
M	37	969.44	965 -	978	969.22	7.14E+01	25.26	8.68E+01	2.42
m	38	973.00	965 -	978	972.78	1.62E+01	24.37	5.12E+01	2.42
m	39	976.44	965 -	978	976.22	1.38E+01	15.17	2.08E+01	2.40
	40	984.30	979 -	990	984.07	2.98E+01	21.35	4.25E+01	8.05

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	41	1003.36	1000 - 1006		1003.12	1.70E+01	15.56	3.19E+01	2.80
	42	1098.37	1095 - 1101		1098.10	1.65E+01	17.06	3.90E+01	3.63
M	43	1120.29	1115 - 1128		1120.01	4.96E+01	22.81	6.56E+01	2.46
m	44	1126.05	1115 - 1128		1125.76	1.23E+01	15.91	3.39E+01	3.33
M	45	1148.36	1145 - 1163		1148.06	2.19E+01	13.08	1.89E+01	3.34
m	46	1155.50	1145 - 1163		1155.20	1.69E+01	18.59	3.22E+01	3.04
m	47	1160.24	1145 - 1163		1159.94	1.40E+01	16.37	3.08E+01	3.35
M	48	1232.21	1230 - 1247		1231.87	1.20E+01	10.95	2.40E+01	2.81
m	49	1237.82	1230 - 1247		1237.49	3.29E+01	20.49	4.80E+01	2.68
	50	1282.37	1277 - 1288		1282.02	3.14E+01	20.40	3.73E+01	4.30
	51	1381.53	1374 - 1390		1381.14	2.60E+01	19.20	2.40E+01	12.56
	52	1460.80	1455 - 1466		1460.38	3.35E+02	39.75	3.06E+01	2.28
	53	1496.40	1492 - 1499		1495.97	9.15E+00	9.17	7.69E+00	3.10
	54	1510.05	1507 - 1512		1509.61	5.78E+00	7.35	6.44E+00	1.68
	55	1590.33	1583 - 1595		1589.86	1.97E+01	13.73	1.26E+01	8.13
	56	1629.99	1626 - 1633		1629.51	1.27E+01	10.00	8.59E+00	1.56
	57	1764.39	1757 - 1767		1763.86	5.60E+01	14.97	0.00E+00	2.47
	58	1776.37	1772 - 1777		1775.83	6.00E+00	4.90	0.00E+00	1.12
	59	1845.91	1840 - 1849		1845.35	1.07E+01	8.77	4.54E+00	4.88
	60	1985.77	1982 - 1987		1985.17	6.00E+00	4.90	0.00E+00	1.98
	61	2118.89	2114 - 2122		2118.25	1.20E+01	6.93	0.00E+00	1.47
	62	2203.33	2198 - 2207		2202.66	1.12E+01	10.68	9.63E+00	1.87
	63	2217.47	2212 - 2220		2216.80	1.00E+01	6.32	0.00E+00	3.65
	64	2283.78	2277 - 2286		2283.09	6.17E+00	7.81	5.67E+00	1.28
	65	2614.36	2610 - 2617		2613.58	3.60E+01	12.00	0.00E+00	1.49

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/13/2016 10:12:24AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	1	46.96	44 -	49	1.63E+02	62.36	6.43E+02	4.68E+01
M	2	74.94	72 -	81	2.39E+02	77.39	9.42E+02	5.05E+01
m	3	77.63	72 -	81	4.97E+02	84.36	9.22E+02	4.99E+01

: 00320

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

	Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
	4	93.14	90 -	97	3.61E+02	90.73	1.04E+03	6.77E+01
	5	99.10	98 -	103	4.69E+01	55.05	5.80E+02	4.38E+01
	6	105.27	103 -	108	6.93E+01	56.44	5.85E+02	4.43E+01
	7	143.61	140 -	147	7.87E+01	68.93	7.39E+02	5.48E+01
	8	186.10	182 -	190	1.89E+02	72.68	6.95E+02	2.54E+01
	9	211.75	205 -	220	1.05E+02	101.67	9.89E+02	8.18E+01
M	10	238.90	234 -	246	4.87E+02	60.88	3.10E+02	2.89E+01
m	11	241.86	234 -	246	1.40E+02	62.37	3.41E+02	3.04E+01
	12	270.57	267 -	273	6.83E+01	44.16	3.05E+02	3.37E+01
	13	295.68	292 -	298	1.83E+02	48.57	3.36E+02	4.20E+01
	14	309.46	306 -	314	4.19E+01	42.87	2.58E+02	3.36E+01
M	15	338.74	336 -	345	1.15E+02	34.37	1.55E+02	2.05E+01
m	16	342.11	336 -	345	3.81E+01	33.84	1.25E+02	1.84E+01
M	17	348.34	346 -	357	2.93E+01	20.88	7.44E+01	1.42E+01
m	18	352.37	346 -	357	3.76E+02	44.51	1.15E+02	1.76E+01
	19	464.39	460 -	472	6.23E+01	47.91	2.41E+02	3.72E+01
	20	477.97	474 -	482	5.00E+01	35.40	1.62E+02	2.67E+01
	21	511.71	506 -	518	1.58E+02	42.18	1.30E+02	2.78E+01
	22	549.41	546 -	552	3.10E+01	22.56	7.00E+01	1.61E+01
M	23	579.04	578 -	590	1.28E+01	10.30	2.78E+01	8.66E+00
m	24	583.85	578 -	590	1.21E+02	32.29	8.98E+01	1.56E+01
	25	609.72	606 -	615	2.34E+02	44.61	1.52E+02	2.67E+01
M	26	698.53	696 -	713	2.62E+01	16.11	3.15E+01	9.23E+00
m	27	702.53	696 -	713	2.47E+01	21.15	4.81E+01	1.14E+01
m	28	710.67	696 -	713	1.94E+01	18.85	5.41E+01	1.21E+01
	29	728.02	723 -	731	3.31E+01	27.74	9.59E+01	2.08E+01
	30	734.74	732 -	737	1.63E+01	17.06	4.55E+01	1.24E+01
	31	768.74	765 -	772	2.41E+01	27.57	1.08E+02	2.12E+01
	32	795.34	790 -	799	3.10E+01	26.78	8.40E+01	2.00E+01
	33	851.90	849 -	855	1.65E+01	17.53	4.10E+01	1.28E+01
M	34	857.83	856 -	865	1.21E+01	11.49	1.74E+01	6.86E+00
m	35	861.01	856 -	865	3.37E+01	21.87	4.70E+01	1.13E+01
	36	911.61	907 -	915	9.05E+01	27.78	6.30E+01	1.66E+01
M	37	969.44	965 -	978	7.14E+01	25.26	8.68E+01	1.53E+01
m	38	973.00	965 -	978	1.62E+01	24.37	5.12E+01	1.18E+01
m	39	976.44	965 -	978	1.38E+01	15.17	2.08E+01	7.49E+00
	40	984.30	979 -	990	2.98E+01	21.35	4.25E+01	1.51E+01
	41	1003.36	1000 -	1006	1.70E+01	15.56	3.19E+01	1.08E+01
	42	1098.37	1095 -	1101	1.65E+01	17.06	3.90E+01	1.23E+01
M	43	1120.29	1115 -	1128	4.96E+01	22.81	6.56E+01	1.33E+01
m	44	1126.05	1115 -	1128	1.23E+01	15.91	3.39E+01	9.57E+00
M	45	1148.36	1145 -	1163	2.19E+01	13.08	1.89E+01	7.15E+00
m	46	1155.50	1145 -	1163	1.69E+01	18.59	3.22E+01	9.34E+00
m	47	1160.24	1145 -	1163	1.40E+01	16.37	3.08E+01	9.12E+00
M	48	1232.21	1230 -	1247	1.20E+01	10.95	2.40E+01	8.05E+00
m	49	1237.82	1230 -	1247	3.29E+01	20.49	4.80E+01	1.14E+01
	50	1282.37	1277 -	1288	3.14E+01	20.40	3.73E+01	1.40E+01
	51	1381.53	1374 -	1390	2.60E+01	19.20	2.40E+01	1.34E+01
	52	1460.80	1455 -	1466	3.35E+02	39.75	3.06E+01	1.28E+01
	53	1496.40	1492 -	1499	9.15E+00	9.17	7.69E+00	5.66E+00
	54	1510.05	1507 -	1512	5.78E+00	7.35	6.44E+00	4.57E+00

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
55	1590.33	1583 -	1595	1.97E+01	13.73	1.26E+01	8.61E+00
56	1629.99	1626 -	1633	1.27E+01	10.00	8.59E+00	5.76E+00
57	1764.39	1757 -	1767	5.60E+01	14.97	0.00E+00	0.00E+00
58	1776.37	1772 -	1777	6.00E+00	4.90	0.00E+00	0.00E+00
59	1845.91	1840 -	1849	1.07E+01	8.77	4.54E+00	4.80E+00
60	1985.77	1982 -	1987	6.00E+00	4.90	0.00E+00	0.00E+00
61	2118.89	2114 -	2122	1.20E+01	6.93	0.00E+00	0.00E+00
62	2203.33	2196 -	2207	1.12E+01	10.68	9.63E+00	6.84E+00
63	2217.47	2212 -	2220	1.00E+01	6.32	0.00E+00	0.00E+00
64	2283.78	2277 -	2286	6.17E+00	7.81	5.67E+00	4.95E+00
65	2614.36	2610 -	2617	3.60E+01	12.00	0.00E+00	0.00E+00

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

PEAK WITH NID REPORT

Peak Analysis Performed on : 4/13/2016 10:12:24AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Peak Match Tolerance : 1.000 keV

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	46.96	44 -	49	47.19	1.63E+02	62.36	6.43E+02	PB-210
M	2	74.94	72 -	81	75.15	2.39E+02	77.39	9.42E+02	AM-243
m	3	77.63	72 -	81	77.85	4.97E+02	84.36	9.22E+02	TI-44
	4	93.14	90 -	97	93.34	3.61E+02	90.73	1.04E+03	GA-67
	5	99.10	98 -	103	99.30	4.69E+01	55.05	5.80E+02	.....
	6	105.27	103 -	108	105.47	6.93E+01	56.44	5.85E+02	EU-155 NP-239
	7	143.61	140 -	147	143.78	7.87E+01	68.93	7.39E+02	U-235
	8	186.10	182 -	190	186.25	1.89E+02	72.68	6.95E+02	RA-226
	9	211.75	205 -	220	211.89	1.05E+02	101.67	9.89E+02	.....
M	10	238.90	234 -	246	239.03	4.87E+02	60.88	3.10E+02	PB-212
m	11	241.86	234 -	246	241.99	1.40E+02	62.37	3.41E+02	RA-224
	12	270.57	267 -	273	270.68	6.83E+01	44.16	3.05E+02	.....
	13	295.68	292 -	298	295.76	1.83E+02	48.57	3.36E+02	PB-214
	14	309.46	306 -	314	309.55	4.19E+01	42.87	2.58E+02	.....

: 00330

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
M	15	338.74	336 -	345	338.82	1.15E+02	34.37	1.55E+02	AC-228
m	16	342.11	336 -	345	342.18	3.81E+01	33.84	1.25E+02	.....
M	17	348.34	346 -	357	348.41	2.93E+01	20.88	7.44E+01	.....
m	18	352.37	346 -	357	352.44	3.76E+02	44.51	1.15E+02	PB-214
	19	464.39	460 -	472	464.40	6.23E+01	47.91	2.41E+02	.....
	20	477.97	474 -	482	477.98	5.00E+01	35.40	1.62E+02	BE-7
	21	511.71	506 -	518	511.70	1.58E+02	42.18	1.30E+02	.....
	22	549.41	546 -	552	549.39	3.10E+01	22.56	7.00E+01	.....
M	23	579.04	578 -	590	579.00	1.28E+01	10.30	2.78E+01	.....
m	24	583.85	578 -	590	583.80	1.21E+02	32.29	8.98E+01	TL-208
	25	609.72	606 -	615	609.66	2.34E+02	44.61	1.52E+02	BI-214
M	26	698.53	696 -	713	698.43	2.62E+01	16.11	3.15E+01	.....
m	27	702.53	696 -	713	702.43	2.47E+01	21.15	4.81E+01	NB-94
m	28	710.67	696 -	713	710.57	1.94E+01	18.85	5.41E+01	.....
	29	728.02	723 -	731	727.91	3.31E+01	27.74	9.59E+01	BI-212
	30	734.74	732 -	737	734.63	1.63E+01	17.06	4.55E+01	PA-234
	31	768.74	765 -	772	768.61	2.41E+01	27.57	1.08E+02	.....
	32	795.34	790 -	799	795.20	3.10E+01	26.78	8.40E+01	CS-134
	33	851.90	849 -	855	851.73	1.65E+01	17.53	4.10E+01	.....
M	34	857.83	856 -	865	857.66	1.21E+01	11.49	1.74E+01	.....
m	35	861.01	856 -	865	860.84	3.37E+01	21.87	4.70E+01	TL-208
	36	911.61	907 -	915	911.41	9.05E+01	27.78	6.30E+01	LU-172
									AC-228
M	37	969.44	965 -	978	969.22	7.14E+01	25.26	8.68E+01	AC-228
m	38	973.00	965 -	978	972.78	1.62E+01	24.37	5.12E+01	.....
m	39	976.44	965 -	978	976.22	1.38E+01	15.17	2.08E+01	.....
	40	984.30	979 -	990	984.07	2.98E+01	21.35	4.25E+01	V-48
	41	1003.36	1000 -	1006	1003.12	1.70E+01	15.56	3.19E+01	.....
	42	1098.37	1095 -	1101	1098.10	1.65E+01	17.06	3.90E+01	FE-59
M	43	1120.29	1115 -	1128	1120.01	4.96E+01	22.81	6.56E+01	BI-214
									SC-46
m	44	1126.05	1115 -	1128	1125.76	1.23E+01	15.91	3.39E+01	.....
M	45	1148.36	1145 -	1163	1148.06	2.19E+01	13.08	1.89E+01	.....
m	46	1155.50	1145 -	1163	1155.20	1.69E+01	18.59	3.22E+01	.....
m	47	1160.24	1145 -	1163	1159.94	1.40E+01	16.37	3.08E+01	.....
M	48	1232.21	1230 -	1247	1231.87	1.20E+01	10.95	2.40E+01	.....
m	49	1237.82	1230 -	1247	1237.49	3.29E+01	20.49	4.80E+01	CO-56
	50	1282.37	1277 -	1288	1282.02	3.14E+01	20.40	3.73E+01	.....
	51	1381.53	1374 -	1390	1381.14	2.60E+01	19.20	2.40E+01	.....
	52	1460.80	1455 -	1466	1460.38	3.35E+02	39.75	3.06E+01	K-40
	53	1496.40	1492 -	1499	1495.97	9.15E+00	9.17	7.69E+00	.....
	54	1510.05	1507 -	1512	1509.61	5.78E+00	7.35	6.44E+00	.....
	55	1590.33	1583 -	1595	1589.86	1.97E+01	13.73	1.26E+01	.....
	56	1629.99	1626 -	1633	1629.51	1.27E+01	10.00	8.59E+00	.....
	57	1764.39	1757 -	1767	1763.86	5.60E+01	14.97	0.00E+00	BI-214
	58	1776.37	1772 -	1777	1775.83	6.00E+00	4.90	0.00E+00	.....
	59	1845.91	1840 -	1849	1845.35	1.07E+01	8.77	4.54E+00	.....
	60	1985.77	1982 -	1987	1985.17	6.00E+00	4.90	0.00E+00	.....
	61	2118.89	2114 -	2122	2118.25	1.20E+01	6.93	0.00E+00	.....
	62	2203.33	2198 -	2207	2202.66	1.12E+01	10.68	9.63E+00	BI-214
	63	2217.47	2212 -	2220	2216.80	1.00E+01	6.32	0.00E+00	.....
	64	2283.78	2277 -	2286	2283.09	6.17E+00	7.81	5.67E+00	.....
	65	2614.36	2610 -	2617	2613.58	3.60E+01	12.00	0.00E+00	TL-208

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet
 Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 4/13/2016 10:12:24AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	46.96	1.63E+02	62.36	1.53E-02	1.58E-03
M	2	74.94	2.39E+02	77.39	2.36E-02	2.09E-03
m	3	77.63	4.97E+02	84.36	2.39E-02	2.18E-03
	4	93.14	3.61E+02	90.73	2.44E-02	2.41E-03
	5	99.10	4.69E+01	55.05	2.43E-02	2.27E-03
	6	105.27	6.93E+01	56.44	2.41E-02	2.12E-03
	7	143.61	7.87E+01	68.93	2.14E-02	1.62E-03
	8	186.10	1.89E+02	72.68	1.83E-02	1.42E-03
	9	211.75	1.05E+02	101.67	1.67E-02	1.30E-03
M	10	238.90	4.87E+02	60.88	1.52E-02	1.18E-03
m	11	241.86	1.40E+02	62.37	1.51E-02	1.17E-03
	12	270.57	6.83E+01	44.16	1.38E-02	1.04E-03
	13	295.68	1.83E+02	48.57	1.28E-02	9.73E-04
	14	309.46	4.19E+01	42.87	1.23E-02	9.54E-04
M	15	338.74	1.15E+02	34.37	1.14E-02	9.12E-04
m	16	342.11	3.81E+01	33.84	1.13E-02	9.08E-04
M	17	348.34	2.93E+01	20.88	1.12E-02	8.99E-04
m	18	352.37	3.76E+02	44.51	1.10E-02	8.93E-04
	19	464.39	6.23E+01	47.91	8.71E-03	7.65E-04
	20	477.97	5.00E+01	35.40	8.49E-03	7.51E-04
	21	511.71	1.58E+02	42.18	8.00E-03	7.17E-04
	22	549.41	3.10E+01	22.56	7.52E-03	6.80E-04
M	23	579.04	1.28E+01	10.30	7.18E-03	6.50E-04
m	24	583.85	1.21E+02	32.29	7.13E-03	6.45E-04
	25	609.72	2.34E+02	44.61	6.87E-03	6.20E-04
M	26	698.53	2.62E+01	16.11	6.10E-03	5.38E-04
m	27	702.53	2.47E+01	21.15	6.07E-03	5.34E-04
m	28	710.67	1.94E+01	18.85	6.01E-03	5.28E-04
	29	728.02	3.31E+01	27.74	5.89E-03	5.14E-04
	30	734.74	1.63E+01	17.06	5.84E-03	5.08E-04
	31	768.74	2.41E+01	27.57	5.61E-03	4.80E-04
	32	795.34	3.10E+01	26.78	5.45E-03	4.59E-04
	33	851.90	1.65E+01	17.53	5.14E-03	4.12E-04
M	34	857.83	1.21E+01	11.49	5.11E-03	4.07E-04

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
m	35	861.01	3.37E+01	21.87	5.09E-03	4.05E-04
	36	911.61	9.05E+01	27.78	4.85E-03	3.72E-04
M	37	969.44	7.14E+01	25.26	4.60E-03	3.61E-04
m	38	973.00	1.62E+01	24.37	4.59E-03	3.61E-04
m	39	976.44	1.38E+01	15.17	4.57E-03	3.60E-04
	40	984.30	2.98E+01	21.35	4.54E-03	3.59E-04
	41	1003.36	1.70E+01	15.56	4.47E-03	3.55E-04
	42	1098.37	1.65E+01	17.06	4.14E-03	3.37E-04
M	43	1120.29	4.96E+01	22.81	4.08E-03	3.33E-04
m	44	1126.05	1.23E+01	15.91	4.06E-03	3.32E-04
M	45	1148.36	2.19E+01	13.08	3.99E-03	3.28E-04
m	46	1155.50	1.69E+01	18.59	3.97E-03	3.27E-04
m	47	1160.24	1.40E+01	16.37	3.96E-03	3.26E-04
M	48	1232.21	1.20E+01	10.95	3.77E-03	3.11E-04
m	49	1237.82	3.29E+01	20.49	3.76E-03	3.09E-04
	50	1282.37	3.14E+01	20.40	3.65E-03	3.00E-04
	51	1381.53	2.60E+01	19.20	3.44E-03	2.81E-04
	52	1460.80	3.35E+02	39.75	3.29E-03	2.69E-04
	53	1496.40	9.15E+00	9.17	3.23E-03	2.64E-04
	54	1510.05	5.78E+00	7.35	3.21E-03	2.62E-04
	55	1590.33	1.97E+01	13.73	3.08E-03	2.50E-04
	56	1629.99	1.27E+01	10.00	3.03E-03	2.44E-04
	57	1764.39	5.60E+01	14.97	2.86E-03	2.24E-04
	58	1776.37	6.00E+00	4.90	2.84E-03	2.22E-04
	59	1845.91	1.07E+01	8.77	2.77E-03	2.13E-04
	60	1985.77	6.00E+00	4.90	2.63E-03	2.13E-04
	61	2118.89	1.20E+01	6.93	2.52E-03	2.13E-04
	62	2203.33	1.12E+01	10.68	2.46E-03	2.13E-04
	63	2217.47	1.00E+01	6.32	2.45E-03	2.13E-04
	64	2283.78	6.17E+00	7.81	2.41E-03	2.13E-04
	65	2614.36	3.60E+01	12.00	2.24E-03	2.13E-04

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/13/2016 10:12:24AM

Env. Background File : \\CR-GAMMA1\ApexRoot\Countroom\Data\0000035178.CNF

: 000000

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
M	1	46.96	1.63E+02	62.36	3.04E+01	2.01E+01	1.32E+02	6.55E+01
	2	74.94	2.39E+02	77.39			2.39E+02	7.74E+01
m	3	77.63	4.97E+02	84.36			4.97E+02	8.44E+01
	4	93.14	3.61E+02	90.73	7.72E+01	4.69E+00	2.84E+02	9.09E+01
	5	99.10	4.69E+01	55.05			4.69E+01	5.51E+01
	6	105.27	6.93E+01	56.44			6.93E+01	5.64E+01
	7	143.61	7.87E+01	68.93			7.87E+01	6.89E+01
	8	186.10	1.89E+02	72.68	3.82E+01	5.87E+00	1.51E+02	7.29E+01
	9	211.75	1.05E+02	101.67			1.05E+02	1.02E+02
M	10	238.90	4.87E+02	60.88	1.06E+01	5.71E+00	4.76E+02	6.11E+01
m	11	241.86	1.40E+02	62.37			1.40E+02	6.24E+01
	12	270.57	6.83E+01	44.16			6.83E+01	4.42E+01
	13	295.68	1.83E+02	48.57			1.83E+02	4.86E+01
	14	309.46	4.19E+01	42.87			4.19E+01	4.29E+01
M	15	338.74	1.15E+02	34.37			1.15E+02	3.44E+01
m	16	342.11	3.81E+01	33.84			3.81E+01	3.38E+01
	17	348.34	2.93E+01	20.88			2.93E+01	2.09E+01
m	18	352.37	3.76E+02	44.51	0.00E+00	0.00E+00	3.76E+02	4.45E+01
	19	464.39	6.23E+01	47.91			6.23E+01	4.79E+01
	20	477.97	5.00E+01	35.40			5.00E+01	3.54E+01
	21	511.71	1.58E+02	42.18	5.95E+01	4.92E+00	9.85E+01	4.25E+01
	22	549.41	3.10E+01	22.56			3.10E+01	2.26E+01
M	23	579.04	1.28E+01	10.30			1.28E+01	1.03E+01
m	24	583.85	1.21E+02	32.29	5.06E+00	2.98E+00	1.16E+02	3.24E+01
	25	609.72	2.34E+02	44.61	2.01E+00	3.84E+00	2.32E+02	4.48E+01
M	26	698.53	2.62E+01	16.11			2.62E+01	1.61E+01
m	27	702.53	2.47E+01	21.15			2.47E+01	2.12E+01
	28	710.67	1.94E+01	18.85			1.94E+01	1.89E+01
m	29	728.02	3.31E+01	27.74			3.31E+01	2.77E+01
	30	734.74	1.63E+01	17.06			1.63E+01	1.71E+01
	31	768.74	2.41E+01	27.57			2.41E+01	2.76E+01
	32	795.34	3.10E+01	26.78			3.10E+01	2.68E+01
	33	851.90	1.65E+01	17.53			1.65E+01	1.75E+01
M	34	857.83	1.21E+01	11.49			1.21E+01	1.15E+01
m	35	861.01	3.37E+01	21.87			3.37E+01	2.19E+01
	36	911.61	9.05E+01	27.78	2.99E+00	2.93E+00	8.75E+01	2.79E+01
M	37	969.44	7.14E+01	25.26			7.14E+01	2.53E+01
m	38	973.00	1.62E+01	24.37			1.62E+01	2.44E+01
	39	976.44	1.38E+01	15.17			1.38E+01	1.52E+01
	40	984.30	2.98E+01	21.35			2.98E+01	2.14E+01
	41	1003.36	1.70E+01	15.56			1.70E+01	1.56E+01
	42	1098.37	1.65E+01	17.06			1.65E+01	1.71E+01
M	43	1120.29	4.96E+01	22.81			4.96E+01	2.28E+01
m	44	1126.05	1.20E+01	15.91			1.23E+01	1.59E+01
	45	1148.36	2.19E+01	13.08			2.19E+01	1.31E+01
M	46	1155.50	1.69E+01	18.59			1.69E+01	1.86E+01
m	47	1160.24	1.40E+01	16.37			1.40E+01	1.64E+01
	48	1232.21	1.20E+01	10.95			1.20E+01	1.10E+01
M	49	1237.82	3.29E+01	20.49			3.29E+01	2.05E+01
m	50	1282.37	3.14E+01	20.40			3.14E+01	2.04E+01
	51	1381.53	2.60E+01	19.20			2.60E+01	1.92E+01
	52	1460.80	3.35E+02	39.75			3.35E+02	3.97E+01
	53	1496.40	9.15E+00	9.17			9.15E+00	9.17E+00
	54	1510.05	5.78E+00	7.35			5.78E+00	7.35E+00

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
55	1590.33	1.97E+01	13.73			1.97E+01	1.37E+01
56	1629.99	1.27E+01	10.00			1.27E+01	1.00E+01
57	1764.39	5.60E+01	14.97			5.60E+01	1.50E+01
58	1776.37	6.00E+00	4.90			6.00E+00	4.90E+00
59	1845.91	1.07E+01	8.77			1.07E+01	8.77E+00
60	1985.77	6.00E+00	4.90			6.00E+00	4.90E+00
61	2118.89	1.20E+01	6.93			1.20E+01	6.93E+00
62	2203.33	1.12E+01	10.68			1.12E+01	1.07E+01
63	2217.47	1.00E+01	6.32			1.00E+01	6.32E+00
64	2283.78	6.17E+00	7.81			6.17E+00	7.81E+00
65	2614.36	3.60E+01	12.00			3.60E+01	1.20E+01

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

AREA CORRECTION REPORT

REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 4/13/2016 10:12:24AM

Ref. Peak Energy : 0.00

Reference Date :

Peak Ratio : 0.00

Uncertainty : 0.00

Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000035178.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	46.96	1.63E+02	62.36	3.04E+01	2.01E+01	1.32E+02	6.55E+01
M	2	74.94	2.39E+02	77.39			2.39E+02	7.74E+01
m	3	77.63	4.97E+02	84.36			4.97E+02	8.44E+01
	4	93.14	3.61E+02	90.73	7.72E+01	4.69E+00	2.84E+02	9.09E+01
	5	99.10	4.69E+01	55.05			4.69E+01	5.51E+01
	6	105.27	6.93E+01	56.44			6.93E+01	5.64E+01
	7	143.61	7.87E+01	68.93			7.87E+01	6.89E+01
	8	186.10	1.89E+02	72.68	3.82E+01	5.87E+00	1.51E+02	7.29E+01
	9	211.75	1.05E+02	101.67			1.05E+02	1.02E+02
M	10	238.90	4.87E+02	60.88	1.06E+01	5.71E+00	4.76E+02	6.11E+01
m	11	241.86	1.40E+02	62.37			1.40E+02	6.24E+01
	12	270.57	6.83E+01	44.16			6.83E+01	4.42E+01
	13	295.68	1.83E+02	48.57			1.83E+02	4.86E+01
	14	309.46	4.19E+01	42.87			4.19E+01	4.29E+01
M	15	338.74	1.15E+02	34.37			1.15E+02	3.44E+01
m	16	342.11	3.81E+01	33.84			3.81E+01	3.38E+01
M	17	348.34	2.93E+01	20.88			2.93E+01	2.09E+01

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
m	18	352.37	3.76E+02	44.51	0.00E+00	0.00E+00	3.76E+02	4.45E+01
	19	464.39	6.23E+01	47.91			6.23E+01	4.79E+01
	20	477.97	5.00E+01	35.40			5.00E+01	3.54E+01
	21	511.71	1.58E+02	42.18	5.95E+01	4.92E+00	9.85E+01	4.25E+01
	22	549.41	3.10E+01	22.56			3.10E+01	2.26E+01
M	23	579.04	1.28E+01	10.30			1.28E+01	1.03E+01
m	24	583.85	1.21E+02	32.29	5.06E+00	2.98E+00	1.16E+02	3.24E+01
	25	609.72	2.34E+02	44.61	2.01E+00	3.84E+00	2.32E+02	4.48E+01
M	26	698.53	2.62E+01	16.11			2.62E+01	1.61E+01
m	27	702.53	2.47E+01	21.15			2.47E+01	2.12E+01
m	28	710.67	1.94E+01	18.85			1.94E+01	1.89E+01
	29	728.02	3.31E+01	27.74			3.31E+01	2.77E+01
	30	734.74	1.63E+01	17.06			1.63E+01	1.71E+01
	31	768.74	2.41E+01	27.57			2.41E+01	2.76E+01
	32	795.34	3.10E+01	26.78			3.10E+01	2.68E+01
	33	851.90	1.65E+01	17.53			1.65E+01	1.75E+01
M	34	857.83	1.21E+01	11.49			1.21E+01	1.15E+01
m	35	861.01	3.37E+01	21.87			3.37E+01	2.19E+01
	36	911.61	9.05E+01	27.78	2.99E+00	2.93E+00	8.75E+01	2.79E+01
M	37	969.44	7.14E+01	25.26			7.14E+01	2.53E+01
m	38	973.00	1.62E+01	24.37			1.62E+01	2.44E+01
m	39	976.44	1.38E+01	15.17			1.38E+01	1.52E+01
	40	984.30	2.98E+01	21.35			2.98E+01	2.14E+01
	41	1003.36	1.70E+01	15.56			1.70E+01	1.56E+01
	42	1098.37	1.65E+01	17.06			1.65E+01	1.71E+01
M	43	1120.29	4.96E+01	22.81			4.96E+01	2.28E+01
m	44	1126.05	1.23E+01	15.91			1.23E+01	1.59E+01
M	45	1148.36	2.19E+01	13.08			2.19E+01	1.31E+01
m	46	1155.50	1.69E+01	18.59			1.69E+01	1.86E+01
m	47	1160.24	1.40E+01	16.37			1.40E+01	1.64E+01
M	48	1232.21	1.20E+01	10.95			1.20E+01	1.10E+01
m	49	1237.82	3.29E+01	20.49			3.29E+01	2.05E+01
	50	1282.37	3.14E+01	20.40			3.14E+01	2.04E+01
	51	1381.53	2.60E+01	19.20			2.60E+01	1.92E+01
	52	1460.80	3.35E+02	39.75			3.35E+02	3.97E+01
	53	1496.40	9.15E+00	9.17			9.15E+00	9.17E+00
	54	1510.05	5.78E+00	7.35			5.78E+00	7.35E+00
	55	1590.33	1.97E+01	13.73			1.97E+01	1.37E+01
	56	1629.99	1.27E+01	10.00			1.27E+01	1.00E+01
	57	1764.39	5.60E+01	14.97			5.60E+01	1.50E+01
	58	1776.37	6.00E+00	4.90			6.00E+00	4.90E+00
	59	1845.91	1.07E+01	8.77			1.07E+01	8.77E+00
	60	1985.77	6.00E+00	4.90			6.00E+00	4.90E+00
	61	2118.89	1.20E+01	6.93			1.20E+01	6.93E+00
	62	2203.33	1.12E+01	10.68			1.12E+01	1.07E+01
	63	2217.47	1.00E+01	6.32			1.00E+01	6.32E+00
	64	2283.78	6.17E+00	7.81			6.17E+00	7.81E+00
	65	2614.36	3.60E+01	12.00			3.60E+01	1.20E+01

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet
 Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BE-7	0.975	477.59 *	10.42	1.12E+00	8.02E-01
K-40	1.000	1460.81 *	10.67	1.32E+01	1.93E+00
GA-67	0.390	93.31 *	35.70	1.67E+02	6.38E+02
		208.95	2.24		
		300.22	16.00		
TL-208	0.955	583.14 *	30.22	7.47E-01	2.19E-01
		860.37 *	4.48	2.05E+00	1.34E+00
		2614.66 *	35.85	6.22E-01	2.16E-01
PB-210	0.967	46.50 *	4.25	2.84E+00	1.44E+00
BI-212	0.680	727.17 *	11.80	6.60E-01	5.57E-01
		1620.62	2.75		
PB-212	0.885	238.63 *	44.60	9.74E-01	1.46E-01
		300.09	3.41		
BI-214	0.977	609.31 *	46.30	1.01E+00	2.16E-01
		1120.29 *	15.10	1.12E+00	5.22E-01
		1764.49 *	15.80	1.72E+00	4.79E-01
		2204.22 *	4.98	1.26E+00	1.21E+00
PB-214	0.967	295.21 *	19.19	1.03E+00	2.85E-01
		351.92 *	37.19	1.27E+00	1.82E-01
RA-224	0.883	240.98 *	3.95	3.26E+00	1.48E+00
RA-226	0.998	186.21 *	3.28	3.48E+00	6.60E+00
AC-228	0.967	338.32 *	11.40	1.23E+00	3.79E-01
		911.07 *	27.70	9.03E-01	2.97E-01
		969.11 *	16.60	1.30E+00	4.70E-01
AM-243	0.989	74.67 *	66.00	2.13E-01	7.13E-02

* = Energy line found in the spectrum.

- = Manually added nuclide.

? = Manually edited nuclide.

Energy Tolerance : 1.000 keV

Nuclide confidence index threshold = 0.30

Errors quoted at 2.000sigma

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/13/2016 10:12:24AM
 Peak Locate From Channel : 1
 Peak Locate To Channel : 4096

Peak No.		Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m	3	77.63	1.37926E-01	8.50	Tol.	TI-44
	5	99.10	1.30349E-02	58.66	D-Esc	
	6	105.27	1.92526E-02	40.71	Tol.	EU-155 NP-239
	7	143.61	2.18713E-02	43.78	Tol.	U-235
	9	211.75	2.92556E-02	48.27		
	12	270.57	1.89794E-02	32.31		
	14	309.46	1.16252E-02	51.22		
m	16	342.11	1.05713E-02	44.46	Sum	
M	17	348.34	8.14869E-03	35.59		
	19	464.33	1.72936E-02	38.48		
	21	511.71	2.73688E-02	21.55		
	22	549.41	8.61111E-03	36.39		
M	23	579.04	3.55030E-03	40.28		
M	26	698.53	7.26792E-03	30.78		
m	27	702.53	6.85775E-03	42.84	Sum	
m	28	710.67	5.39317E-03	48.56		
	30	734.74	4.51567E-03	52.47	Tol.	PA-234
	31	768.74	6.69872E-03	57.16		
	32	795.34	8.60921E-03	43.20	Sum	
	33	851.90	4.58709E-03	53.07	Sum	
M	34	857.83	3.35604E-03	47.55		
m	38	973.00	4.50222E-03	75.19		
m	39	976.44	3.82767E-03	55.03		
	40	984.30	8.26797E-03	35.87	Tol.	V-48
	41	1003.36	4.73485E-03	45.66		
	42	1098.37	4.58333E-03	51.69	Sum	
m	44	1126.05	3.41036E-03	64.78		
M	45	1148.36	6.08893E-03	29.83		
m	46	1155.50	4.70521E-03	54.89	Sum	
m	47	1160.24	3.89615E-03	58.36		
M	48	1232.21	3.34641E-03	45.47		
m	49	1237.82	9.12701E-03	31.19	Tol.	CO-56
	50	1282.37	8.71111E-03	32.52		
	51	1381.53	7.22588E-03	36.91		
	53	1496.40	2.54274E-03	50.06	Sum	
	54	1510.05	1.60494E-03	63.59		
	55	1590.33	5.47008E-03	34.86		
	56	1629.99	3.52941E-03	39.35		
	58	1776.37	1.66667E-03	40.82		
	59	1845.91	2.98077E-03	40.89		
	60	1985.77	1.66667E-03	40.82		

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
61	2118.89	3.33333E-03	28.87		
63	2217.47	2.77778E-03	31.62		
64	2283.78	1.71296E-03	63.33		

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BE-7	0.97	477.59 *	10.42	1.12E+00	8.02E-01
K-40	1.00	1460.81 *	10.67	1.32E+01	1.93E+00
GA-67	0.39	93.31 *	35.70	1.67E+02	6.38E+02
		208.95	2.24		
		300.22	16.00		
TL-208	0.95	583.14 *	30.22	7.47E-01	2.19E-01
		860.37 *	4.48	2.05E+00	1.34E+00
		2614.66 *	35.85	6.22E-01	2.16E-01
PB-210	0.96	46.50 *	4.25	2.84E+00	1.44E+00
BI-212	0.68	727.17 *	11.80	6.60E-01	5.57E-01
		1620.62	2.75		
PB-212	0.88	238.63 *	44.60	9.74E-01	1.46E-01
		300.09	3.41		
BI-214	0.97	609.31 *	46.30	1.01E+00	2.16E-01
		1120.29 *	15.10	1.12E+00	5.22E-01
		1764.49 *	15.20	1.72E+00	4.79E-01
		2204.22 *	4.98	1.26E+00	1.21E+00
PB-214	0.96	295.21 *	19.19	1.03E+00	2.85E-01
		351.92 *	37.19	1.27E+00	1.82E-01
RA-224	0.88	240.98 *	3.95	3.26E+00	1.48E+00
RA-226	0.99	186.21 *	3.28	3.48E+00	6.60E+00
AC-228	0.96	338.32 *	11.40	1.23E+00	3.79E-01
		911.07 *	27.70	9.03E-01	2.97E-01
		969.11 *	16.60	1.30E+00	4.70E-01
AM-243	0.98	74.67 *	66.00	2.13E-01	7.13E-02

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Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

* = Energy line found in the spectrum.

- = Manually added nuclide.

? = Manually edited nuclide.

@ = Energy line not used for Weighted Mean Activity

Energy Tolerance : 1.000 keV

Nuclide confidence index threshold = 0.30

Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
BE-7	0.975	1.12E+00	8.02E-01	
K-40	1.000	1.32E+01	1.93E+00	
GA-67	0.390	1.67E+02	6.38E+02	
TL-208	0.955	7.01E-01	1.53E-01	
PB-210	0.967	2.84E+00	1.44E+00	
BI-212	0.680	6.60E-01	5.57E-01	
PB-212	0.885	9.74E-01	1.46E-01	
BI-214	0.977	1.13E+00	1.82E-01	
PB-214	0.967	1.20E+00	1.53E-01	
RA-224	0.883	3.26E+00	1.48E+00	
RA-226	0.998	3.48E+00	6.60E+00	
AC-228	0.967	1.08E+00	2.09E-01	
AM-243	0.989	2.13E-01	7.13E-02	

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/13/2016 10:12:24AM
 Peak Locate From Channel : 1
 Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m 3	77.63	1.37926E-01	8.50	Tol.	TI-44
5	99.10	1.30349E-02	58.66	D-Esc	
6	105.27	1.92526E-02	40.71	Tol.	EU-155 NP-239
7	143.61	2.18713E-02	43.78	Tol.	U-235
9	211.75	2.92556E-02	48.27		
12	270.57	1.89794E-02	32.31		
14	309.46	1.16252E-02	51.22		
m 16	342.11	1.05713E-02	44.46	Sum	
M 17	348.34	8.14869E-03	35.59		
19	464.39	1.72936E-02	38.48		
21	511.71	2.73688E-02	21.55		
22	549.41	8.61111E-03	36.39		
M 23	579.04	3.55030E-03	40.28		
M 26	698.53	7.26792E-03	30.78		
m 27	702.53	6.85775E-03	42.84	Sum	
m 28	710.67	5.39317E-03	48.56		
30	734.74	4.51567E-03	52.47	Tol.	PA-234
31	768.74	6.69872E-03	57.16		
32	795.34	8.60921E-03	43.20	Sum	
33	851.90	4.58709E-03	53.07	Sum	
M 34	857.83	3.35604E-03	47.55		
m 38	973.00	4.50222E-03	75.19		
m 39	976.44	3.82767E-03	55.03		
40	984.30	8.26797E-03	35.87	Tol.	V-48
41	1003.36	4.73485E-03	45.66		
42	1098.37	4.58333E-03	51.69	Sum	
m 44	1126.05	3.41036E-03	64.78		
M 45	1148.36	6.08893E-03	29.83		
m 46	1155.50	4.70521E-03	54.89	Sum	
m 47	1160.24	3.89615E-03	58.36		
M 48	1232.21	3.34641E-03	45.47		
m 49	1237.82	9.12701E-03	31.19	Tol.	CO-56
50	1282.37	8.71111E-03	32.52		
51	1381.53	7.22588E-03	36.91		

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
53	1496.40	2.54274E-03	50.06	Sum	
54	1510.05	1.60494E-03	63.59		
55	1590.33	5.47008E-03	34.86		
56	1629.99	3.52941E-03	39.35		
58	1776.37	1.66667E-03	40.82		
59	1845.91	2.98077E-03	40.89		
60	1985.77	1.66667E-03	40.82		
61	2118.89	3.33333E-03	28.87		
63	2217.47	2.77778E-03	31.62		
64	2283.78	1.71296E-03	63.33		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \DR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	*	10.42	1.12E+00	1.26E+00	1.26E+00
+	NA-22	1274.54		99.94	2.47E-02	9.85E-02	9.85E-02
+	NA-24	1368.53		99.99	4.71E+11	1.19E+12	2.49E+12
		2754.09		99.86	1.61E+11		1.19E+12
+	AL-26	1808.65		99.76	-1.09E-02	6.49E-02	6.49E-02
+	K-40	1460.81	*	10.67	1.32E+01	1.12E+00	1.12E+00
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	-2.01E-02	6.97E-02	6.97E-02
		78.34		96.00	1.84E-01		8.65E-02
+	SC-46	889.25		99.98	1.21E-02	1.09E-01	1.09E-01
		1120.51		99.99	2.55E-01		1.92E-01
+	V-48	983.52		99.98	1.37E-01	3.13E-01	3.13E-01
		1312.10		97.50	-1.73E-01		3.32E-01
+	CR-51	320.08		9.83	-2.67E-01	1.33E+00	1.33E+00
+	MN-54	834.83		99.97	-7.39E-04	9.27E-02	9.27E-02
+	CO-56	846.75		99.96	-2.26E-02	1.05E-01	1.05E-01
		1037.75		14.03	-3.63E-01		7.68E-01
		1238.25		67.00	1.64E-01		2.64E-01

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CO-56	1771.40	15.51	-2.36E-01	1.05E-01	4.82E-01
		2598.48	16.90	-1.71E-01		3.43E-01
+	CO-57	122.06	85.51	-1.83E-03	5.97E-02	5.97E-02
		136.48	10.60	6.40E-03		4.95E-01
+	CO-58	810.76	99.40	-4.82E-02	1.03E-01	1.03E-01
+	FE-59	1099.22	56.50	5.48E-02	2.72E-01	2.72E-01
		1291.56	43.20	1.53E-01		3.54E-01
+	CO-60	1173.22	100.00	-1.41E-02	9.43E-02	9.43E-02
		1332.49	100.00	-2.91E-02		9.71E-02
+	ZN-65	1115.52	50.75	-6.24E-03	1.88E-01	1.88E-01
+	GA-67	93.31	* 35.70	1.67E+02	8.35E+01	8.35E+01
		208.95	2.24	7.93E+02		1.12E+03
		300.22	16.00	4.70E+01		1.66E+02
+	SE-75	121.11	16.70	-3.08E-02	9.67E-02	3.35E-01
		136.00	59.20	1.72E-02		9.67E-02
		264.65	59.80	2.96E-02		1.25E-01
		279.53	25.20	1.19E-01		3.33E-01
		400.65	11.40	-1.82E-01		7.31E-01
+	RB-82	776.52	13.00	2.78E-01	1.30E+00	1.30E+00
+	RB-83	520.41	46.00	-2.49E-02	1.73E-01	1.73E-01
		529.64	30.30	-1.74E-01		2.88E-01
		552.65	16.40	-5.89E-02		5.52E-01
+	KR-85	513.99	0.43	3.34E+01	2.35E+01	2.35E+01
+	SR-85	513.99	99.27	1.96E-01	1.38E-01	1.38E-01
+	Y-88	898.02	93.40	2.41E-02	7.89E-02	1.23E-01
		1836.01	99.38	-1.40E-02		7.89E-02
+	NB-93M	16.57	9.43	-2.34E+01	8.01E+01	8.01E+01
+	NB-94	702.63	100.00	-2.68E-03	9.06E-02	9.06E-02
		871.10	100.00	1.33E-02		9.23E-02
+	NB-95	765.79	99.81	3.61E-03	1.83E-01	1.83E-01
+	NB-95M	235.69	25.00	9.81E+01	8.38E+01	8.38E+01
+	ZR-95	724.18	43.70	9.85E-03	1.87E-01	2.79E-01
		756.72	55.30	-6.74E-03		1.87E-01
+	MO-99	181.06	6.20	2.67E+01	6.51E+02	9.71E+02
		739.58	12.80	3.48E+01		6.51E+02
		778.00	4.50	-5.81E+02		1.84E+03
+	RU-103	497.08	89.00	5.33E-02	1.29E-01	1.29E-01
+	RU-106	621.84	9.80	8.84E-02	8.15E-01	8.15E-01
+	AG-108M	433.93	89.90	-1.02E-02	8.19E-02	8.19E-02
		614.37	90.40	2.10E-02		9.97E-02
		722.95	90.50	6.35E-03		9.22E-02
+	CD-109	88.03	3.72	-1.09E+00	1.76E+00	1.76E+00
+	AG-110M	657.75	93.14	-4.92E-02	8.99E-02	8.99E-02
		677.61	10.53	-4.21E-01		6.96E-01
		706.67	16.46	-4.41E-01		5.22E-01
		763.93	21.93	1.69E-02		4.42E-01
		884.67	71.63	-4.41E-02		1.27E-01
		1384.27	23.94	1.01E-02		4.09E-01

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	CD-113M	263.70	0.02	-1.67E+00	2.71E+02	2.71E+02
+	SN-113	255.12	1.93	5.67E-02	1.22E-01	3.92E+00
		391.69	64.90	-9.33E-02		1.22E-01
+	TE123M	159.00	84.10	1.11E-02	7.31E-02	7.31E-02
+	SB-124	602.71	97.87	-4.95E-02	1.05E-01	1.05E-01
		645.85	7.26	-4.26E-01		1.39E+00
		722.78	11.10	7.13E-02		1.03E+00
		1691.02	49.00	-4.85E-02		2.10E-01
+	I-125	35.49	6.49	-1.47E-01	2.77E+00	2.77E+00
+	SB-125	176.33	6.89	-2.98E-01	2.39E-01	7.29E-01
		427.89	29.33	-8.99E-02		2.39E-01
		463.38	10.35	2.29E-01		8.20E-01
		600.56	17.80	2.51E-01		4.78E-01
		635.90	11.32	-1.94E-01		6.84E-01
+	SB-126	414.70	83.30	-4.71E-02	3.76E-01	3.99E-01
		666.33	99.60	-2.89E-01		3.76E-01
		695.00	99.60	9.05E-02		3.80E-01
		720.50	53.80	-8.12E-02		7.05E-01
+	SN-126	87.57	37.00	-1.05E-01	1.70E-01	1.70E-01
+	SB-127	473.00	25.00	-5.77E+01	3.41E+01	4.15E+01
		685.20	35.70	6.12E+00		3.41E+01
		783.80	14.70	6.41E+01		9.54E+01
+	I-129	29.78	57.00	-1.04E-01	3.95E-01	3.95E-01
		33.60	13.20	1.11E-01		1.16E+00
		39.58	7.52	-1.40E-01		1.36E+00
+	I-131	284.30	6.05	2.93E-01	7.95E-01	1.28E+01
		364.48	81.20	-5.38E-02		7.95E-01
		636.97	7.26	-4.09E+00		1.15E+01
		722.89	1.80	3.52E+00		5.10E+01
+	TE-132	49.72	13.10	1.65E+01	2.64E+01	2.05E+02
		228.16	88.00	-3.68E+00		2.64E+01
+	BA-133	81.00	33.00	-6.96E-02	1.66E-01	1.76E-01
		302.84	17.80	1.49E-01		3.66E-01
		356.01	60.00	-1.24E-03		1.66E-01
+	I-133	529.87	86.30	-2.27E+08	3.75E+08	3.75E+08
+	XE-133	81.00	38.00	-2.38E+00	6.03E+00	6.03E+00
+	CS-134	563.23	8.38	-3.69E-01	8.60E-02	8.22E-01
		569.32	15.43	-9.29E-02		4.94E-01
		604.70	97.60	9.39E-03		8.60E-02
		795.84	85.40	8.70E-02		1.18E-01
		801.90	8.73	-6.47E-01		8.49E-01
+	CS-135	268.24	16.00	9.36E-03	4.44E-01	4.44E-01
+	@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41	28.60	1.00E+26		1.00E+26
	@	1678.03	9.54	1.00E+26		1.00E+26
+	CS-136	153.22	7.46	1.59E+00	3.33E-01	3.05E+00
		163.89	4.61	-4.93E-01		4.63E+00
		176.55	13.56	-3.61E-01		1.61E+00
		273.65	12.66	-1.69E+00		2.38E+00

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	CS-136	340.57	48.50	1.38E+00	3.33E-01	7.59E-01
		818.50	99.70	-5.58E-02		3.33E-01
		1048.07	79.60	1.05E-01		4.86E-01
		1235.34	19.70	1.43E+00		2.94E+00
+	CS-137	661.65	85.12	1.27E-02	1.00E-01	1.00E-01
+	LA-138	788.74	34.00	8.61E-02	1.45E-01	2.57E-01
		1435.80	66.00	3.31E-03		1.45E-01
+	CE-139	165.85	80.35	-4.97E-05	7.11E-02	7.11E-02
+	BA-140	162.64	6.70	-1.60E+00	1.36E+00	3.30E+00
		304.84	4.50	-6.28E-01		6.22E+00
		423.70	3.20	3.95E+00		1.01E+01
		437.55	2.00	5.82E+00		1.68E+01
		537.32	25.00	2.17E-01		1.36E+00
+	LA-140	328.77	20.50	-6.56E-02	4.42E-01	1.59E+00
		487.03	45.50	-3.23E-02		6.96E-01
		815.85	23.50	-1.47E-01		1.49E+00
		1596.49	95.49	-3.91E-02		4.42E-01
+	CE-141	145.44	48.40	1.18E-01	1.99E-01	1.99E-01
+	CE-143	57.36	11.80	1.28E+05	2.80E+05	7.01E+05
		293.26	42.00	2.16E+04		2.80E+05
		664.55	5.20	1.12E+06		2.12E+06
+	CE-144	133.54	10.80	-1.38E-01	4.77E-01	4.77E-01
+	PM-144	476.78	42.00	1.63E-01	8.06E-02	2.11E-01
		618.01	98.60	-1.71E-02		8.06E-02
		696.49	99.49	2.40E-02		9.02E-02
+	PM-145	36.85	21.70	-3.52E-01	2.98E-01	5.38E-01
		37.36	39.70	1.77E-01		2.98E-01
		42.30	15.10	-1.47E-01		5.88E-01
		72.40	2.31	-6.14E+00		3.07E+00
+	PM-146	453.90	39.94	-4.72E-02	1.83E-01	1.83E-01
		735.90	14.01	2.74E-02		5.87E-01
		747.13	13.10	-1.81E-01		5.83E-01
+	ND-147	91.11	28.90	-4.49E-01	1.33E+00	1.33E+00
		531.02	13.10	-1.91E+00		3.07E+00
+	PM-149	285.90	3.10	5.53E+03	1.40E+04	1.40E+04
+	EU-152	121.73	20.50	-7.12E-03	2.33E-01	2.33E-01
		244.69	5.40	1.73E-01		1.50E+00
		344.27	19.13	-6.68E-01		3.33E-01
		778.89	9.20	-4.90E-01		7.80E-01
		964.01	10.40	2.39E-01		1.10E+00
		1085.78	7.22	-1.23E-01		1.32E+00
		1112.02	9.60	9.83E-02		1.01E+00
		1407.95	14.94	-2.24E-01		6.02E-01
+	GD-153	97.43	31.30	-2.30E-01	1.65E-01	1.65E-01
		103.18	22.20	-2.04E-01		2.23E-01
+	EU-154	123.07	40.50	2.10E-02	1.20E-01	1.20E-01
		723.30	19.70	2.93E-02		4.26E-01
		873.19	11.50	-2.58E-01		7.84E-01
		996.32	10.30	2.49E-01		5.23E-01

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	EU-154	1004.76	17.90	4.65E-02	1.20E-01	5.35E-01
		1274.45	35.50	6.87E-02		2.73E-01
+	EU-155	86.50	30.90	-9.26E-03	2.08E-01	2.08E-01
		105.30	20.70	1.42E-01		2.36E-01
+	EU-156	811.77	10.40	1.27E-01	2.75E+00	2.75E+00
		1153.47	7.20	-6.80E-02		5.41E+00
		1230.71	8.90	3.99E-01		4.27E+00
+	HO-166M	184.41	72.60	1.54E-01	9.54E-02	9.54E-02
		280.45	29.60	2.96E-02		2.42E-01
		410.94	11.10	8.81E-02		6.59E-01
		711.69	54.10	3.14E-02		1.53E-01
+	TM-171	66.72	0.14	-5.21E+01	4.94E+01	4.94E+01
+	HF-172	81.75	4.52	-2.72E-01	4.40E-01	1.29E+00
		125.81	11.30	-1.26E-01		4.40E-01
+	LU-172	181.53	20.60	-6.23E-02	2.83E+00	4.65E+00
		810.06	16.63	-1.13E+00		8.89E+00
		912.12	15.25	3.10E+01		1.76E+01
		1093.66	62.50	6.67E-01		2.83E+00
+	LU-173	100.72	5.24	5.67E-01	3.61E-01	9.30E-01
		272.11	21.20	2.23E-02		3.61E-01
+	HF-175	343.40	84.00	-1.40E-01	1.04E-01	1.04E-01
+	LU-176	88.34	13.30	-6.30E-02	6.62E-02	5.01E-01
		201.83	86.00	1.43E-02		7.23E-02
		306.78	94.00	-8.55E-03		6.62E-02
+	TA-182	67.75	41.20	-5.45E-02	1.89E-01	1.89E-01
		1121.30	34.90	6.03E-01		5.21E-01
		1189.05	16.23	4.30E-01		8.08E-01
		1221.41	26.98	1.30E-01		5.03E-01
		1231.02	11.44	-5.43E-02		1.06E+00
+	IR-192	308.46	29.68	1.77E-01	2.04E-01	2.84E-01
		468.07	48.10	-5.90E-02		2.04E-01
+	HG-203	279.19	77.30	4.85E-02	1.38E-01	1.38E-01
+	BI-207	569.67	97.72	-2.96E-02	7.79E-02	7.79E-02
		1063.62	74.90	9.07E-02		1.48E-01
+	TL-208	583.14	*	30.22	4.67E-02	4.00E-01
		860.37	*	4.48	2.05E+00	2.02E+00
		2614.66	*	35.85	6.22E-01	4.67E-02
+	BI-210M	262.00	45.00	3.04E-03	1.43E-01	1.43E-01
		300.00	23.00	8.81E-02		3.11E-01
+	PB-210	46.50	*	4.25	2.22E+00	2.22E+00
+	PB-211	404.84	2.90	5.11E-01	2.60E+00	2.60E+00
		831.96	2.90	-9.69E-01		2.93E+00
+	BI-212	727.17	*	11.80	8.83E-01	8.83E-01
		1620.62	2.75	5.58E-01		3.01E+00
+	PB-212	238.63	*	44.60	2.47E-01	2.47E-01
		300.09	3.41	5.94E-01		2.10E+00
+	BI-214	609.31	*	46.30	8.31E-02	2.47E-01
		1120.29	*	15.10	1.12E+00	1.21E+00

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	BI-214	1764.49	*	15.80	1.72E+00	8.31E-02	8.31E-02
		2204.22	*	4.98	1.26E+00		1.85E+00
+	PB-214	295.21	*	19.19	1.03E+00	2.48E-01	4.90E-01
		351.92	*	37.19	1.27E+00		2.48E-01
+	RN-219	401.80		6.50	-5.06E-01	1.08E+00	1.08E+00
+	RA-223	323.87		3.88	-6.62E-01	1.75E+00	1.75E+00
+	RA-224	240.98	*	3.95	3.26E+00	2.82E+00	2.82E+00
+	RA-225	40.00		31.00	-1.22E-01	1.18E+00	1.18E+00
+	RA-226	186.21	*	3.28	3.48E+00	2.68E+00	2.68E+00
+	TH-227	50.10		8.40	6.83E-02	8.49E-01	8.49E-01
		236.00		11.50	1.02E+00		8.71E-01
		256.20		6.30	2.22E-01		1.01E+00
+	AC-228	338.32	*	11.40	1.23E+00	3.80E-01	7.15E-01
		911.07	*	27.70	9.03E-01		3.80E-01
		969.11	*	16.60	1.30E+00		1.15E+00
+	TH-230	48.44		16.90	-2.05E-02	4.96E-01	4.96E-01
		62.85		4.60	2.04E+00		1.59E+00
		67.67		0.37	-5.13E+00		1.78E+01
+	PA-231	283.67		1.60	1.00E-01	2.82E+00	4.38E+00
		302.67		2.30	1.15E+00		2.82E+00
+	TH-231	25.64		14.70	-1.07E+00	9.22E-01	3.03E+00
		84.21		6.40	-6.63E-01		9.22E-01
+	PA-233	311.98		38.60	3.67E-02	3.39E-01	3.39E-01
+	PA-234	131.20		20.40	5.15E-02	2.44E-01	2.44E-01
		733.99		8.80	-1.71E-01		8.96E-01
		946.00		12.00	-5.82E-01		6.93E-01
+	PA-234M	1001.03		0.92	-4.37E-01	9.63E+00	9.63E+00
+	TH-234	63.23		3.80	1.09E+00	1.91E+00	1.91E+00
+	U-235	143.76		10.50	3.64E-01	5.16E-01	5.16E-01
		163.35		4.70	-1.11E-01		1.05E+00
		205.31		4.70	1.12E-01		1.32E+00
+	NP-237	86.50		12.60	-2.25E-02	5.05E-01	5.05E-01
+	NP-239	106.10		22.70	5.05E+02	7.88E+02	7.88E+02
		228.18		10.70	-2.94E+02		2.11E+03
		277.60		14.10	6.77E+02		1.78E+03
+	AM-241	59.54		35.90	-1.57E-01	1.82E-01	1.82E-01
+	AM-243	74.67	*	66.00	2.13E-01	1.57E-01	1.57E-01
+	CM-243	209.75		3.29	1.51E+00	4.98E-01	2.06E+00
		228.14		10.60	-8.22E-02		5.90E-01
		277.60		14.00	1.89E-01		4.98E-01

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = MDA value not calculated

@ = Half-life too short to be able to perform the decay correction

? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
+	BE-7	477.59 *	10.42	1.26E+00	1.26E+00	1.12E+00	6.00E-01
	NA-22	1274.54	99.94	9.85E-02	9.85E-02	2.47E-02	4.40E-02
	NA-24	1368.53	99.99	2.49E+12	1.19E+12	4.71E+11	1.11E+12
		2754.09	99.86	1.19E+12		1.61E+11	3.76E+11
	AL-26	1808.65	99.76	6.49E-02	6.49E-02	-1.09E-02	2.58E-02
+	K-40	1460.81 *	10.67	1.12E+00	1.12E+00	1.32E+01	5.04E-01
@	AR-41	1293.64	99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
	TI-44	67.88	94.40	6.97E-02	6.97E-02	-2.01E-02	3.40E-02
		78.24	96.00	8.65E-02		1.84E-01	4.24E-02
	SC-46	889.25	99.98	1.09E-01	1.09E-01	1.21E-02	4.99E-02
		1120.51	99.99	1.92E-01		2.55E-01	9.02E-02
	V-48	983.52	99.98	3.13E-01	3.13E-01	1.37E-01	1.43E-01
		1312.10	97.50	3.32E-01		-1.73E-01	1.48E-01
	CR-51	320.08	9.83	1.33E+00	1.33E+00	-2.67E-01	6.31E-01
	MN-54	834.83	99.97	9.27E-02	9.27E-02	-7.39E-04	4.25E-02
	CO-56	846.75	99.96	1.05E-01	1.05E-01	-2.26E-02	4.79E-02
		1037.75	14.03	7.68E-01		-3.63E-01	3.45E-01
		1238.25	67.00	2.64E-01		1.64E-01	1.23E-01
		1771.40	15.51	4.82E-01		-2.36E-01	1.87E-01
		2598.48	16.90	3.43E-01		-1.71E-01	1.09E-01
	CO-57	122.06	85.51	5.97E-02	5.97E-02	-1.83E-03	2.88E-02
		136.48	10.60	4.95E-01		6.40E-03	2.39E-01
	CO-58	810.76	99.40	1.03E-01	1.03E-01	-4.82E-02	4.70E-02
	FE-59	1099.22	56.50	2.72E-01	2.72E-01	5.48E-02	1.24E-01
		1291.56	43.20	3.54E-01		1.53E-01	1.59E-01
	CO-60	1173.22	100.00	9.43E-02	9.43E-02	-1.41E-02	4.23E-02
		1332.49	100.00	9.71E-02		-2.91E-02	4.32E-02
	ZN-65	1115.52	50.75	1.88E-01	1.88E-01	-6.24E-03	8.41E-02
+	GA-67	93.31 *	35.70	8.35E+01	8.35E+01	1.67E+02	4.09E+01
		208.95	2.24	1.12E+03		7.93E+02	5.40E+02
		300.22	16.00	1.66E+02		4.70E+01	7.96E+01
	SE-75	121.11	16.70	3.35E-01	9.67E-02	-3.08E-02	1.62E-01
		136.00	59.20	9.67E-02		1.72E-02	4.67E-02
		264.65	59.80	1.25E-01		2.96E-02	5.96E-02
		279.53	25.20	3.33E-01		1.19E-01	1.60E-01
		400.65	11.40	7.31E-01		-1.82E-01	3.46E-01
	RB-82	776.52	13.00	1.30E+00	1.30E+00	2.78E-01	5.92E-01

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
RB-83	520.41	46.00	1.73E-01	1.73E-01	-2.49E-02	8.02E-02
	529.64	30.30	2.88E-01		-1.74E-01	1.34E-01
	552.65	16.40	5.52E-01		-5.89E-02	2.57E-01
KR-85	513.99	0.43	2.35E+01	2.35E+01	3.34E+01	1.12E+01
SR-85	513.99	99.27	1.38E-01	1.38E-01	1.96E-01	6.57E-02
Y-88	898.02	93.40	1.23E-01	7.89E-02	2.41E-02	5.65E-02
	1836.01	99.38	7.89E-02		-1.40E-02	3.13E-02
NB-93M	16.57	9.43	8.01E+01	8.01E+01	-2.34E+01	3.89E+01
NB-94	702.63	100.00	9.06E-02	9.06E-02	-2.68E-03	4.22E-02
	871.10	100.00	9.23E-02		1.33E-02	4.24E-02
NB-95	765.79	99.81	1.83E-01	1.83E-01	3.61E-03	8.56E-02
NB-95M	235.69	25.00	8.38E+01	8.38E+01	9.81E+01	4.09E+01
ZR-95	724.18	43.70	2.79E-01	1.87E-01	9.85E-03	1.30E-01
	756.72	55.30	1.87E-01		-6.74E-03	8.54E-02
MO-99	181.06	6.20	9.71E+02	6.51E+02	2.67E+01	4.68E+02
	739.58	12.80	6.51E+02		3.48E+01	2.97E+02
	778.00	4.50	1.84E+03		-5.81E+02	8.36E+02
RU-103	497.08	89.00	1.29E-01	1.29E-01	5.33E-02	6.03E-02
RU-106	621.84	9.80	8.15E-01	8.15E-01	8.84E-02	3.78E-01
AG-108M	423.93	89.90	8.19E-02	8.19E-02	-1.02E-02	3.87E-02
	614.37	90.40	9.97E-02		2.10E-02	4.68E-02
	722.95	90.50	9.22E-02		6.35E-03	4.26E-02
CD-109	88.03	3.72	1.76E+00	1.76E+00	-1.09E+00	8.61E-01
AG-110M	657.75	93.14	8.99E-02	8.99E-02	-4.92E-02	4.16E-02
	677.61	10.53	6.96E-01		-4.21E-01	3.17E-01
	706.67	16.46	5.22E-01		-4.41E-01	2.40E-01
	763.93	21.98	4.42E-01		1.69E-02	2.05E-01
	884.67	71.63	1.27E-01		-4.41E-02	5.79E-02
	1384.27	23.94	4.09E-01		1.01E-02	1.80E-01
	263.70	0.02	2.71E+02	2.71E+02	-1.67E+00	1.30E+02
SN-113	255.12	1.93	3.92E+00	1.22E-01	5.67E-02	1.88E+00
	391.69	64.90	1.22E-01		-9.33E-02	5.74E-02
TE123M	159.00	84.10	7.31E-02	7.31E-02	1.11E-02	3.52E-02
SB-124	602.71	97.87	1.05E-01	1.05E-01	-4.95E-02	4.86E-02
	645.85	7.26	1.39E+00		-4.26E-01	6.43E-01
	722.78	11.10	1.03E+00		7.13E-02	4.78E-01
	1691.02	49.00	2.10E-01		-4.85E-02	8.71E-02
I-125	35.49	6.49	2.77E+00	2.77E+00	-1.47E-01	1.33E+00
SB-125	176.33	6.89	7.29E-01	2.39E-01	-2.98E-01	3.50E-01
	427.89	29.33	2.39E-01		-8.99E-02	1.13E-01
	463.38	10.35	8.20E-01		2.29E-01	3.89E-01
	600.56	17.80	4.78E-01		2.51E-01	2.24E-01
	635.90	11.32	6.84E-01		-1.94E-01	3.16E-01
SB-126	414.70	83.30	3.99E-01	3.76E-01	-4.71E-02	1.88E-01
	666.33	99.60	3.76E-01		-2.89E-01	1.74E-01
	695.00	99.60	3.80E-01		9.05E-02	1.75E-01
	720.50	53.80	7.05E-01		-8.12E-02	3.25E-01
SN-126	87.57	37.00	1.70E-01	1.70E-01	-1.05E-01	8.31E-02
SB-127	473.00	25.00	4.15E+01	3.41E+01	-5.77E+01	1.94E+01
	685.20	35.70	3.41E+01		6.12E+00	1.58E+01
	783.80	14.70	9.54E+01		6.41E+01	4.42E+01
I-129	29.78	57.00	3.95E-01	3.95E-01	-1.04E-01	1.90E-01
	33.60	13.20	1.16E+00		1.11E-01	5.58E-01

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SEDIMENT 2016-03-16B

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
I-129	39.58	7.52	1.36E+00	3.95E-01	-1.40E-01	6.55E-01
I-131	284.30	6.05	1.28E+01	7.95E-01	2.93E-01	6.14E+00
	364.48	81.20	7.95E-01		-5.38E-02	3.74E-01
	636.97	7.26	1.15E+01		-4.09E+00	5.34E+00
	722.89	1.80	5.10E+01		3.52E+00	2.36E+01
TE-132	49.72	13.10	2.05E+02	2.64E+01	1.65E+01	9.93E+01
	228.16	88.00	2.64E+01		-3.68E+00	1.27E+01
BA-133	81.00	33.00	1.76E-01	1.66E-01	-6.96E-02	8.57E-02
	302.84	17.80	3.66E-01		1.49E-01	1.75E-01
	356.01	60.00	1.66E-01		-1.24E-03	8.00E-02
I-133	529.87	86.30	3.75E+08	3.75E+08	-2.27E+08	1.75E+08
XE-133	81.00	38.00	6.03E+00	6.03E+00	-2.38E+00	2.94E+00
CS-134	563.23	8.38	8.22E-01	8.60E-02	-3.69E-01	3.80E-01
	569.32	15.43	4.94E-01		-9.29E-02	2.30E-01
	604.70	97.60	8.60E-02		9.39E-03	4.01E-02
	795.84	85.40	1.18E-01		8.70E-02	5.46E-02
	801.93	8.73	8.49E-01		-6.47E-01	3.84E-01
CS-135	268.24	16.00	4.44E-01	4.44E-01	9.96E-03	2.14E-01
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41	28.60	1.00E+26		1.00E+26	1.00E+20
@	1678.03	9.54	1.00E+26		1.00E+26	1.00E+20
CS-136	153.22	7.46	3.05E+00	3.33E-01	1.59E+00	1.47E+00
	163.89	4.61	4.63E+00		-4.93E-01	2.23E+00
	176.55	13.56	1.61E+00		-3.61E-01	7.74E-01
	273.65	12.66	2.38E+00		-1.69E+00	1.14E+00
	340.57	48.50	7.59E-01		1.38E+00	3.65E-01
	818.50	99.70	3.33E-01		-5.58E-02	1.51E-01
	1048.07	79.60	4.86E-01		1.05E-01	2.19E-01
	1235.34	19.70	2.94E+00		1.43E+00	1.36E+00
CS-137	661.65	85.12	1.00E-01	1.00E-01	1.27E-02	4.68E-02
LA-138	788.74	34.00	2.57E-01	1.45E-01	8.61E-02	1.18E-01
	1435.80	66.00	1.45E-01		3.31E-03	6.39E-02
CE-139	165.85	80.35	7.11E-02	7.11E-02	-4.97E-05	3.42E-02
BA-140	162.64	6.70	3.30E+00	1.36E+00	-1.60E+00	1.59E+00
	304.84	4.50	6.22E+00		-6.28E-01	2.96E+00
	423.70	3.20	1.01E+01		3.95E+00	4.78E+00
	437.55	2.00	1.68E+01		5.82E+00	7.95E+00
	537.32	25.00	1.36E+00		2.17E-01	6.36E-01
LA-140	328.77	20.50	1.59E+00	4.42E-01	-6.56E-02	7.61E-01
	487.03	45.50	6.96E-01		-3.23E-02	3.26E-01
	815.85	23.50	1.49E+00		-1.47E-01	6.78E-01
	1596.49	95.49	4.42E-01		-3.91E-02	1.92E-01
CE-141	145.44	48.40	1.99E-01	1.99E-01	1.18E-01	9.63E-02
CE-143	57.36	11.80	7.01E+05	2.80E+05	1.28E+05	3.41E+05
	293.26	42.00	2.80E+05		2.16E+04	1.36E+05
	664.55	5.20	2.12E+06		1.12E+06	9.88E+05
CE-144	133.54	10.80	4.77E-01	4.77E-01	-1.38E-01	2.30E-01
PM-144	476.78	42.00	2.11E-01	8.06E-02	1.63E-01	9.98E-02
	618.01	98.60	8.06E-02		-1.71E-02	3.74E-02
	696.49	99.49	9.02E-02		2.40E-02	4.18E-02
PM-145	36.85	21.70	5.38E-01	2.98E-01	-3.52E-01	2.59E-01
	37.36	39.70	2.98E-01		1.77E-01	1.44E-01
	42.30	15.10	5.88E-01		-1.47E-01	2.84E-01

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
PM-145	72.40	2.31	3.07E+00	2.98E-01	-6.14E+00	1.50E+00
PM-146	453.90	39.94	1.83E-01	1.83E-01	-4.72E-02	8.61E-02
	735.90	14.01	5.87E-01		2.74E-02	2.70E-01
	747.13	13.10	5.83E-01		-1.81E-01	2.66E-01
ND-147	91.11	28.90	1.33E+00	1.33E+00	-4.49E-01	6.52E-01
	531.02	13.10	3.07E+00		-1.91E+00	1.43E+00
PM-149	285.90	3.10	1.40E+04	1.40E+04	5.53E+03	6.72E+03
EU-152	121.78	20.50	2.33E-01	2.33E-01	-7.12E-03	1.12E-01
	244.69	5.40	1.50E+00		1.73E-01	7.26E-01
	344.27	19.13	3.33E-01		-6.68E-01	1.58E-01
	778.89	9.20	7.80E-01		-4.90E-01	3.53E-01
	964.01	10.40	1.10E+00		2.39E-01	5.13E-01
	1085.78	7.22	1.32E+00		-1.23E-01	5.97E-01
	1112.02	9.60	1.01E+00		9.83E-02	4.58E-01
	1407.95	14.94	6.02E-01		-2.24E-01	2.64E-01
GD-153	97.43	31.30	1.65E-01	1.65E-01	-2.30E-01	7.98E-02
	103.18	22.20	2.23E-01		-2.04E-01	1.08E-01
EU-154	123.07	40.50	1.20E-01	1.20E-01	2.10E-02	5.80E-02
	723.30	19.70	4.26E-01		2.93E-02	1.97E-01
	873.19	11.50	7.84E-01		-2.58E-01	3.59E-01
	996.32	10.30	8.23E-01		2.49E-01	3.71E-01
	1004.76	17.90	5.35E-01		4.65E-02	2.44E-01
	1274.45	35.50	2.73E-01		6.87E-02	1.22E-01
EU-155	86.50	30.90	2.08E-01	2.08E-01	-9.26E-03	1.02E-01
	105.30	20.70	2.36E-01		1.42E-01	1.14E-01
EU-156	811.77	10.40	2.75E+00	2.75E+00	1.27E-01	1.25E+00
	1153.47	7.20	5.41E+00		-6.80E-02	2.47E+00
	1230.71	8.90	4.27E+00		3.99E-01	1.94E+00
HO-166M	184.41	72.60	9.54E-02	9.54E-02	1.54E-01	4.63E-02
	280.45	29.60	2.42E-01		2.96E-02	1.16E-01
	410.94	11.10	6.59E-01		8.81E-02	3.12E-01
	711.69	54.10	1.53E-01		3.14E-02	7.10E-02
TM-171	66.72	0.14	4.94E+01	4.94E+01	-5.21E+01	2.41E+01
HF-172	81.75	4.52	1.29E+00	4.40E-01	-2.72E-01	6.29E-01
	125.81	11.30	4.40E-01		-1.26E-01	2.12E-01
LU-172	181.53	20.60	4.65E+00	2.83E+00	-6.23E-02	2.24E+00
	810.06	16.63	8.89E+00		-1.13E+00	4.07E+00
	912.12	15.25	1.76E+01		3.10E+01	8.37E+00
	1093.66	62.50	2.83E+00		6.67E-01	1.29E+00
LU-173	100.72	5.24	9.30E-01	3.61E-01	5.67E-01	4.49E-01
	272.11	21.20	3.61E-01		2.23E-02	1.74E-01
HF-175	343.40	84.00	1.04E-01	1.04E-01	-1.40E-01	4.95E-02
LU-176	88.34	13.30	5.01E-01	6.62E-02	-6.30E-02	2.45E-01
	201.83	86.00	7.23E-02		1.43E-02	3.49E-02
	306.72	94.00	6.62E-02		-8.55E-03	3.15E-02
TA-182	67.75	41.20	1.89E-01	1.89E-01	-5.45E-02	9.21E-02
	1121.30	34.90	5.21E-01		6.03E-01	2.45E-01
	1189.05	16.23	8.08E-01		4.30E-01	3.69E-01
	1221.41	26.98	5.03E-01		1.30E-01	2.30E-01
	1231.02	11.44	1.06E+00		-5.43E-02	4.76E-01
IR-192	308.46	29.68	2.84E-01	2.04E-01	1.77E-01	1.36E-01
	468.07	48.10	2.04E-01		-5.90E-02	9.60E-02
HG-203	279.19	77.30	1.39E-01	1.38E-01	4.85E-02	6.60E-02

Analysis Report for 1603102-05

SEDIMENT 2016-03-16B

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
BI-207	569.67	97.72	7.79E-02	7.79E-02	-2.96E-02	3.63E-02
	1063.62		1.48E-01		9.07E-02	6.80E-02
+ TL-208	583.14 *	30.22	4.00E-01	4.67E-02	7.47E-01	1.91E-01
	860.37 *	4.48	2.02E+00		2.05E+00	9.27E-01
	2614.66 *	35.85	4.67E-02		6.22E-01	0.00E+00
BI-210M	262.00	45.00	1.43E-01	1.43E-01	3.04E-03	6.84E-02
	300.00	23.00	3.11E-01		8.81E-02	1.49E-01
+ PB-210	46.50 *	4.25	2.22E+00	2.22E+00	2.84E+00	1.08E+00
PB-211	404.84	2.90	2.60E+00	2.60E+00	5.11E-01	1.23E+00
	831.96	2.90	2.93E+00		-9.69E-01	1.34E+00
+ BI-212	727.17 *	11.80	8.83E-01	8.83E-01	6.60E-01	4.15E-01
	1620.62	2.75	3.01E+00		5.58E-01	1.28E+00
+ PB-212	238.63 *	44.60	2.47E-01	2.47E-01	9.74E-01	1.21E-01
	300.09	3.41	2.10E+00		5.94E-01	1.01E+00
+ BI-214	609.31 *	46.30	2.47E-01	8.31E-02	1.01E+00	1.18E-01
	1120.29 *	15.10	1.21E+00		1.12E+00	5.75E-01
	1764.49 *	15.80	8.31E-02		1.72E+00	0.00E+00
	2204.22 *	4.98	1.85E+00		1.26E+00	7.74E-01
+ PB-214	295.21 *	19.19	4.90E-01	2.48E-01	1.03E+00	2.37E-01
	351.92 *	37.19	2.48E-01		1.27E+00	1.19E-01
RN-219	401.80	6.50	1.08E+00	1.08E+00	-5.06E-01	5.10E-01
RA-223	323.87	3.88	1.75E+00	1.75E+00	-6.62E-01	8.32E-01
+ RA-224	240.98 *	3.95	2.82E+00	2.82E+00	3.26E+00	1.38E+00
RA-225	40.00	31.00	1.18E+00	1.18E+00	-1.22E-01	5.71E-01
+ RA-226	186.21 *	3.28	2.68E+00	2.68E+00	3.48E+00	1.31E+00
TH-227	50.10	8.40	8.49E-01	8.49E-01	6.83E-02	4.11E-01
	236.00	11.50	8.71E-01		1.02E+00	4.25E-01
	256.20	6.30	1.01E+00		2.22E-01	4.85E-01
+ AC-228	338.32 *	11.40	7.15E-01	3.80E-01	1.23E+00	3.43E-01
	911.07 *	27.70	3.80E-01		9.03E-01	1.76E-01
	969.11 *	16.60	1.15E+00		1.30E+00	5.48E-01
TH-230	48.44	16.90	4.96E-01	4.96E-01	-2.05E-02	2.41E-01
	62.85	4.60	1.59E+00		2.04E+00	7.74E-01
	67.67	0.37	1.78E+01		-5.13E+00	8.67E+00
PA-231	283.67	1.60	4.38E+00	2.82E+00	1.00E-01	2.10E+00
	302.67	2.30	2.82E+00		1.15E+00	1.35E+00
TH-231	25.64	14.70	3.03E+00	9.22E-01	-1.27E+00	1.46E+00
	84.21	6.40	9.22E-01		-6.63E-01	4.49E-01
PA-233	311.98	38.60	3.39E-01	3.39E-01	3.67E-02	1.61E-01
PA-234	131.20	20.40	2.44E-01	2.44E-01	5.15E-02	1.18E-01
	733.99	8.80	8.96E-01		-1.71E-01	4.11E-01
	946.00	12.00	6.93E-01		-5.82E-01	3.13E-01
PA-234M	1001.03	0.92	9.63E+00	9.63E+00	-4.37E-01	4.36E+00
TH-234	63.29	3.80	1.91E+00	1.91E+00	1.09E+00	9.30E-01
U-235	143.76	10.50	5.16E-01	5.16E-01	3.64E-01	2.50E-01
	163.35	4.70	1.05E+00		-1.11E-01	5.04E-01
	205.31	4.70	1.32E+00		1.12E-01	6.35E-01
NP-237	86.50	12.60	5.05E-01	5.05E-01	-2.25E-02	2.46E-01
NP-239	106.10	22.70	7.88E+02	7.88E+02	5.05E+02	3.82E+02
	228.18	10.70	2.11E+03		-2.94E+02	1.01E+03
	277.60	14.10	1.78E+03		6.77E+02	8.55E+02
AM-241	59.54	35.90	1.82E-01	1.82E-01	-1.57E-01	8.86E-02
+ AM-243	74.67 *	66.00	1.57E-01	1.57E-01	2.13E-01	7.73E-02

Analysis Report for 1603102-05

SEDIMENT 2016-03-16E

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
CM-243	209.75	3.29	2.06E+00	4.98E-01	1.51E+00	9.95E-01
	228.14	10.60	5.90E-01		-8.22E-02	2.84E-01
	277.60	14.00	4.98E-01		1.89E-01	2.39E-01

- + = Nuclide identified during the nuclide identification
- * = Energy line found in the spectrum
- > = MDA value not calculated
- @ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

DATA REVIEW COMMENTS REPORT

Creation Date	Comment	User
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No Data Review Comments Entered.

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: SEDIMENT 2016-03-16B

Elapsed Live time: 3600

Elapsed Real Time: 3612

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	0	0	0	0
9:	2	140	151	119	90	96	73	86
17:	84	69	60	70	58	59	90	54
25:	68	65	54	44	48	56	46	56
33:	54	58	36	55	53	58	52	63
41:	54	51	60	61	53	72	147	103
49:	48	48	64	62	60	63	73	77
57:	79	69	80	92	78	91	113	174
65:	105	76	112	120	103	92	108	85
73:	87	126	218	232	253	387	108	85
81:	80	99	72	94	129	74	98	154
89:	95	119	141	74	177	172	91	75
97:	33	47	82	66	53	46	43	64
105:	67	75	56	57	47	69	46	44
113:	55	53	56	69	52	64	50	53
121:	54	55	59	48	60	45	61	57
129:	55	65	56	53	49	48	48	57
137:	47	57	48	46	60	44	61	74
145:	73	50	40	51	43	48	48	58
153:	45	53	60	48	40	59	61	43
161:	47	43	44	42	36	48	47	40
169:	46	38	36	39	48	36	42	37
177:	42	36	45	44	45	36	57	41
185:	52	114	103	53	41	39	35	41
193:	48	45	49	39	35	44	40	38
201:	40	44	32	35	29	37	39	33
209:	51	52	40	38	36	32	33	43
217:	35	36	37	29	31	36	28	49
225:	29	37	32	29	26	31	31	34
233:	21	25	36	42	30	90	297	175
241:	54	102	72	34	29	25	35	29
249:	25	29	22	27	24	20	28	26
257:	34	30	24	32	17	27	28	27
265:	27	21	21	23	22	49	53	33
273:	20	25	25	18	25	46	35	24
281:	22	27	24	25	31	32	30	27
289:	23	25	21	21	15	23	85	148
297:	45	14	22	27	27	25	21	18
305:	12	15	20	19	18	28	26	15
313:	17	13	17	19	16	24	14	19
321:	13	20	26	25	20	20	17	27
329:	30	27	19	17	26	20	19	12
337:	22	31	72	28	20	30	15	11
345:	10	8	16	18	22	10	42	178
353:	170	25	11	13	14	13	17	19
361:	13	11	16	12	11	13	12	9

369: 10 10 17 17 21 14 21 15

Sample Title: SEDIMENT 2016-03-16B

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	17	16	6	11	16	11	12	12
385:	16	21	15	21	13	16	18	11
393:	13	14	12	21	19	16	17	10
401:	9	18	22	14	13	16	21	14
409:	15	24	14	6	20	15	13	10
417:	15	18	9	13	8	15	16	21
425:	13	13	12	13	10	15	12	15
433:	10	19	15	14	14	16	18	12
441:	11	10	10	12	16	10	7	9
449:	14	13	7	12	11	14	11	22
457:	11	16	14	4	18	17	23	23
465:	17	12	12	15	12	10	13	7
473:	12	6	13	13	15	32	19	12
481:	12	9	9	8	4	10	16	14
489:	7	13	15	9	5	9	11	8
497:	7	13	8	14	6	10	11	9
505:	9	5	9	13	23	24	48	36
513:	15	15	11	8	10	6	1	7
521:	7	12	9	5	12	18	10	11
529:	5	11	7	6	11	9	11	10
537:	5	12	12	11	11	8	10	11
545:	4	6	8	10	8	20	6	8
553:	2	7	10	8	7	10	11	6
561:	6	8	6	6	10	8	9	8
569:	12	10	9	5	11	11	15	5
577:	7	7	13	6	7	19	48	61
585:	20	15	11	7	8	6	6	9
593:	7	15	11	8	6	13	17	5
601:	9	8	11	8	8	6	10	16
609:	89	130	30	6	6	8	9	7
617:	14	5	4	7	8	10	8	7
625:	10	3	7	3	5	5	4	8
633:	12	7	5	3	7	9	9	12
641:	10	7	8	6	5	8	2	9
649:	9	11	5	7	7	9	4	9
657:	6	8	6	7	11	17	7	7
665:	7	10	8	7	6	9	10	6
673:	5	10	6	6	3	3	8	7
681:	3	7	9	7	9	9	6	5
689:	6	9	3	5	13	5	4	2
697:	6	14	12	9	5	14	11	11
705:	7	6	7	6	6	4	13	7
713:	3	5	13	5	6	6	7	7
721:	5	9	6	6	8	9	16	13
729:	10	9	4	3	5	12	9	8
737:	2	6	4	2	6	10	6	5
745:	5	5	10	4	6	3	7	5
753:	4	5	4	3	7	8	8	3
761:	3	10	7	9	8	8	8	19
769:	15	9	6	5	6	7	9	2
777:	3	6	6	1	7	6	6	6
785:	7	18	5	4	6	4	6	4
793:	9	10	11	12	6	8	3	4

801: 4 7 2 5 5 10 10 4

Sample Title: SEDIMENT 2016-03-16B

Channel	-----	-----	-----	-----	-----	-----	-----	-----
809:	5	5	5	3	8	5	6	3
817:	4	4	4	5	7	5	4	6
825:	11	9	6	3	4	11	4	6
833:	6	5	4	14	4	3	4	6
841:	8	6	9	4	4	7	7	3
849:	6	5	6	8	7	3	2	2
857:	8	5	8	9	18	7	7	5
865:	2	4	2	13	4	6	6	6
873:	4	5	7	7	5	8	4	4
881:	6	3	5	1	11	5	4	9
889:	8	4	1	6	4	4	7	8
897:	4	6	9	7	4	5	8	6
905:	7	4	3	3	7	13	47	28
913:	7	9	5	2	5	2	5	8
921:	6	10	12	2	7	4	6	4
929:	4	3	3	8	14	11	5	4
937:	5	9	1	6	9	2	8	2
945:	5	3	6	1	5	11	7	7
953:	5	5	3	6	2	3	5	3
961:	4	10	7	12	9	7	9	11
969:	31	21	3	4	10	3	3	8
977:	3	3	0	4	7	7	3	5
985:	3	7	4	5	4	2	2	3
993:	4	6	4	5	4	4	1	3
1001:	3	5	8	7	5	2	3	6
1009:	1	5	7	3	2	3	2	4
1017:	4	1	7	3	9	6	6	3
1025:	3	4	4	5	6	3	5	4
1033:	9	2	4	3	0	4	8	3
1041:	4	7	4	2	2	5	7	2
1049:	6	4	3	5	2	3	6	7
1057:	4	4	4	7	5	5	6	7
1065:	8	7	4	2	4	6	4	2
1073:	7	3	8	6	2	3	5	3
1081:	4	5	5	6	6	1	6	5
1089:	2	4	6	4	9	3	5	3
1097:	8	8	5	6	1	3	3	5
1105:	6	5	4	4	5	5	4	2
1113:	3	6	6	1	1	6	17	33
1121:	14	6	5	2	4	8	4	2
1129:	3	4	4	0	6	5	0	5
1137:	7	7	5	8	2	4	6	2
1145:	1	0	11	7	5	3	7	4
1153:	5	3	9	7	3	7	6	4
1161:	8	3	1	3	6	4	6	2
1169:	6	5	3	2	1	8	3	4
1177:	5	4	3	5	6	2	7	1
1185:	6	6	5	4	5	6	7	4
1193:	3	2	5	6	7	5	5	3
1201:	4	8	8	2	3	6	9	6
1209:	2	4	3	6	5	7	2	7
1217:	1	8	2	5	2	7	6	8
1225:	4	5	7	3	4	2	5	8

1233: 3 4 4 7 14 12 10 3

Sample Title: SEDIMENT 2016-03-16B

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1241:	6	6	5	3	4	3	1	5
1249:	1	2	3	6	5	4	3	2
1257:	7	5	3	1	4	4	6	5
1265:	5	6	5	5	4	4	2	7
1273:	3	2	3	1	1	1	8	6
1281:	5	6	5	5	4	5	3	1
1289:	3	3	6	0	3	4	2	2
1297:	0	2	2	2	6	2	3	3
1305:	3	2	6	2	1	4	2	4
1313:	4	2	1	3	3	5	3	7
1321:	3	5	6	0	4	1	6	2
1329:	1	2	0	3	6	3	1	4
1337:	2	4	1	2	3	2	3	1
1345:	1	3	3	1	1	2	4	4
1353:	1	1	4	3	5	3	1	2
1361:	4	3	3	3	4	0	3	1
1369:	1	3	4	3	1	1	1	5
1377:	5	5	1	3	1	2	1	3
1385:	1	1	3	3	2	0	1	1
1393:	2	2	3	1	4	1	3	2
1401:	1	4	5	1	4	0	3	2
1409:	2	2	1	2	2	1	1	1
1417:	1	1	2	0	2	1	5	2
1425:	3	0	2	1	4	2	2	5
1433:	1	4	2	1	0	1	3	3
1441:	0	0	1	1	1	3	0	2
1449:	1	1	2	4	3	1	1	2
1457:	5	12	39	120	127	36	2	2
1465:	2	2	1	1	3	0	0	1
1473:	0	0	3	1	0	0	0	2
1481:	0	1	2	0	0	2	1	2
1489:	1	0	0	0	1	0	3	3
1497:	4	2	0	2	0	2	0	2
1505:	1	0	0	0	3	5	1	0
1513:	2	0	1	0	0	1	1	1
1521:	0	1	3	1	4	1	1	0
1529:	2	2	2	2	1	1	4	2
1537:	1	0	1	0	0	1	4	1
1545:	1	1	1	0	1	1	2	2
1553:	1	1	0	1	0	1	1	0
1561:	0	1	0	1	0	1	0	2
1569:	3	1	4	1	1	3	3	0
1577:	3	2	1	0	0	2	0	2
1585:	1	2	5	3	2	1	1	2
1593:	3	4	0	0	1	1	2	2
1601:	1	1	1	0	0	2	1	1
1609:	1	1	0	1	0	2	2	1
1617:	1	1	2	1	3	1	0	1
1625:	0	0	2	2	2	6	3	2
1633:	0	2	2	2	2	4	0	0
1641:	2	0	0	1	2	1	0	1
1649:	2	1	0	1	0	2	1	0
1657:	2	0	1	0	1	0	2	0

1663: 0 1 1 0 2 0 1 0

Sample Title: SEDIMENT 2016-03-16B

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1673:	3	1	1	0	0	0	1	3
1681:	0	1	0	1	1	1	0	0
1689:	2	0	2	1	0	1	2	2
1697:	3	0	2	1	2	1	0	2
1705:	1	0	1	0	0	0	0	0
1713:	0	0	1	1	0	1	0	0
1721:	1	1	1	2	2	1	0	2
1729:	3	2	1	2	1	0	2	0
1737:	0	0	0	0	1	0	0	1
1745:	0	0	1	1	0	2	0	0
1753:	0	2	0	0	0	1	1	1
1761:	1	2	10	20	16	4	0	0
1769:	2	1	0	0	0	0	1	5
1777:	0	0	1	0	0	0	0	0
1785:	0	0	0	0	0	0	0	0
1793:	0	1	0	0	1	1	0	1
1801:	0	0	4	0	1	0	1	1
1809:	1	0	0	1	1	0	0	1
1817:	2	0	2	1	1	0	0	0
1825:	2	1	1	0	2	1	0	1
1833:	0	0	2	1	1	0	0	0
1841:	1	1	2	0	0	3	4	2
1849:	0	1	1	2	0	1	1	0
1857:	1	2	0	1	1	2	0	1
1865:	1	3	0	2	0	2	1	1
1873:	0	1	0	1	2	0	0	0
1881:	1	1	3	1	1	0	0	0
1889:	0	0	2	1	2	0	1	0
1897:	1	1	3	0	3	1	1	0
1905:	1	0	1	1	1	0	0	0
1913:	0	0	3	0	1	0	1	1
1921:	0	0	1	1	0	0	0	0
1929:	0	1	1	1	0	1	1	0
1937:	0	0	1	1	0	0	2	2
1945:	1	0	0	0	0	2	1	0
1953:	0	0	0	3	0	2	0	0
1961:	1	0	1	0	0	1	0	3
1969:	0	1	0	2	2	0	2	1
1977:	2	1	1	0	0	0	0	1
1985:	3	2	0	0	0	1	0	1
1993:	2	2	0	0	0	2	1	2
2001:	1	1	1	1	3	0	0	1
2009:	3	0	0	0	0	1	1	0
2017:	0	1	0	0	0	1	2	0
2025:	0	0	2	1	0	0	0	0
2033:	0	1	1	1	0	0	1	2
2041:	0	0	2	0	0	0	0	0
2049:	1	3	0	1	0	1	1	1
2057:	1	2	0	1	0	0	0	1
2065:	0	0	0	0	3	0	0	1
2073:	0	0	0	1	1	0	1	1
2081:	0	0	1	1	1	0	0	0
2089:	0	0	0	0	0	0	0	2

2097: 1 0 1 0 0 5 3 1

Sample Title: SEDIMENT 2016-03-16B

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2105:	1	0	2	0	0	0	1	0
2113:	0	0	1	0	4	2	2	1
2121:	2	0	0	0	0	0	1	0
2129:	0	1	0	0	1	1	0	2
2137:	1	0	0	0	0	0	0	0
2145:	0	1	0	1	0	1	0	0
2153:	1	0	0	2	2	0	1	3
2161:	0	1	0	0	1	2	0	1
2169:	0	1	1	0	1	0	1	0
2177:	0	1	1	0	1	0	0	0
2185:	0	0	1	0	0	0	0	1
2193:	0	1	0	1	0	0	0	0
2201:	2	3	6	3	0	1	1	1
2209:	0	0	0	0	1	0	0	3
2217:	3	1	2	0	0	0	0	0
2225:	0	1	0	2	0	0	0	2
2233:	2	0	1	0	0	0	0	0
2241:	0	1	1	0	1	0	1	0
2249:	0	1	2	0	3	0	1	0
2257:	0	0	1	0	3	0	0	0
2265:	0	2	0	0	2	0	1	0
2273:	0	0	0	1	0	1	0	1
2281:	0	1	1	4	1	0	0	1
2289:	0	1	2	1	0	2	2	0
2297:	0	2	1	0	0	1	1	0
2305:	0	0	1	0	0	0	3	1
2313:	0	0	2	1	1	0	0	0
2321:	0	1	0	1	0	0	0	0
2329:	1	1	0	0	1	0	0	0
2337:	2	0	0	1	1	2	1	0
2345:	0	0	0	0	0	0	0	0
2353:	0	1	1	0	1	0	1	0
2361:	0	1	2	0	0	3	1	1
2369:	0	0	1	0	2	0	1	1
2377:	0	1	0	0	1	1	1	0
2385:	0	1	1	1	0	0	0	2
2393:	2	1	0	1	0	0	4	0
2401:	1	0	0	1	1	0	0	0
2409:	1	0	0	0	1	0	1	0
2417:	1	1	0	0	1	0	2	1
2425:	0	1	1	1	0	0	0	1
2433:	1	1	0	0	1	1	0	1
2441:	2	0	0	1	1	0	3	0
2449:	0	0	1	0	1	0	1	1
2457:	1	0	0	0	1	1	0	0
2465:	0	0	0	0	1	0	1	0
2473:	0	0	0	2	1	1	1	0
2481:	1	0	0	0	0	0	0	0
2489:	1	0	0	0	0	0	0	0
2497:	0	1	0	0	1	0	0	0
2505:	0	1	0	1	0	0	0	0
2513:	0	0	2	0	0	1	1	0
2521:	0	0	1	0	0	1	1	0

2529: 0 0 0 2 0 1 1 0

Sample Title: SEDIMENT 2016-03-16B

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2537:	0	1	0	0	0	0	1	0
2545:	0	0	0	1	0	0	0	0
2553:	0	1	0	0	0	0	0	0
2561:	0	0	0	0	0	0	1	0
2569:	1	0	0	0	1	0	0	2
2577:	0	0	0	0	0	0	0	0
2585:	0	0	1	0	0	0	0	0
2593:	0	0	0	1	0	0	0	0
2601:	0	0	2	0	0	0	1	0
2609:	0	0	0	2	19	9	4	2
2617:	0	0	0	0	0	0	0	0
2625:	0	0	0	1	0	0	0	1
2633:	0	0	0	0	0	1	0	1
2641:	0	0	0	2	0	0	0	1
2649:	0	2	0	1	0	0	0	0
2657:	0	1	0	0	0	0	0	0
2665:	2	0	0	0	0	0	0	0
2673:	1	0	0	0	0	1	0	1
2681:	0	0	1	0	0	0	0	1
2689:	0	0	0	0	1	0	0	0
2697:	0	1	1	1	0	0	0	1
2705:	1	0	1	0	0	0	0	2
2713:	0	0	1	1	0	0	0	0
2721:	1	1	0	1	0	1	1	1
2729:	0	0	1	0	1	0	1	0
2737:	0	0	1	0	0	2	0	1
2745:	0	0	0	0	0	0	0	0
2753:	0	0	0	0	1	0	0	0
2761:	0	0	0	1	0	0	0	0
2769:	0	0	0	0	1	0	1	0
2777:	0	0	0	0	0	0	0	0
2785:	0	0	1	0	1	0	0	0
2793:	0	0	0	0	0	0	0	0
2801:	0	0	0	0	0	0	0	1
2809:	1	1	0	0	0	0	0	0
2817:	0	0	0	0	0	0	0	1
2825:	0	0	0	0	0	0	0	0
2833:	0	0	0	1	0	0	1	0
2841:	0	0	0	1	0	1	0	0
2849:	0	0	0	0	0	0	0	0
2857:	0	0	0	0	0	0	0	0
2865:	0	1	0	0	1	0	0	1
2873:	0	0	0	0	0	0	0	0
2881:	0	0	0	0	1	0	0	0
2889:	0	0	0	1	0	0	0	1
2897:	0	0	1	0	0	0	0	1
2905:	0	0	0	1	0	0	0	0
2913:	0	0	0	0	0	0	0	0
2921:	0	0	0	0	0	0	0	0
2929:	0	0	0	0	0	0	0	0
2937:	0	0	0	0	0	0	1	0
2945:	0	1	0	0	0	0	0	0
2953:	0	1	0	0	0	0	0	0

2261: 0 0 0 0 0 0 0 0

Sample Title: SEDIMENT 2016-03-16B

Channel	-----	-----	-----	-----	-----	-----	-----
2969:	0	0	0	0	0	0	0
2977:	0	0	0	1	1	1	0
2985:	0	0	0	0	0	0	0
2993:	1	0	0	0	0	0	0
3001:	1	0	0	0	0	0	0
3009:	0	0	0	0	1	1	0
3017:	0	0	0	0	1	0	0
3025:	0	1	0	0	0	0	1
3033:	0	0	0	0	0	0	3
3041:	1	0	0	0	0	0	0
3049:	0	0	0	0	1	0	0
3057:	0	0	0	1	0	0	1
3065:	0	0	0	0	0	0	0
3073:	0	0	0	1	0	0	0
3081:	0	1	1	0	0	0	0
3089:	0	0	0	0	1	0	0
3097:	1	0	0	0	1	1	0
3105:	0	1	0	0	0	1	0
3113:	0	0	0	1	0	0	0
3121:	0	0	0	0	0	0	0
3129:	0	0	0	0	0	0	0
3137:	0	0	0	0	0	0	0
3145:	0	0	0	0	0	0	0
3153:	0	0	0	0	1	0	0
3161:	0	0	1	0	0	0	0
3169:	0	1	0	0	0	0	0
3177:	1	0	0	0	0	0	1
3185:	0	0	0	0	0	0	1
3193:	0	0	0	1	1	0	0
3201:	0	1	0	0	0	0	0
3209:	0	0	0	0	0	1	1
3217:	0	0	0	1	0	1	0
3225:	0	0	0	0	0	0	0
3233:	0	0	1	0	0	0	0
3241:	0	0	0	0	0	0	0
3249:	0	0	0	0	0	0	0
3257:	0	1	0	0	0	0	0
3265:	0	0	0	0	0	0	0
3273:	0	0	0	0	0	0	0
3281:	0	0	0	1	0	0	0
3289:	0	1	0	0	0	0	0
3297:	0	1	0	1	0	0	0
3305:	0	2	0	1	0	0	0
3313:	0	0	0	0	0	0	0
3321:	1	0	0	1	0	0	0
3329:	0	0	0	0	0	0	0
3337:	0	0	0	0	0	0	0
3345:	0	0	2	0	0	1	0
3353:	1	0	0	1	0	0	1
3361:	2	0	0	0	0	0	0
3369:	0	0	0	1	0	0	0
3377:	0	0	0	0	1	0	0
3385:	0	0	0	0	0	0	0

3393: 0 0 0 1 0 0 0 0

Sample Title: SEDIMENT 2016-03-16B

Channel	-----	-----	-----	-----	-----	-----	-----	-----
3401:	0	0	0	0	0	0	0	0
3409:	0	1	0	1	0	1	0	1
3417:	0	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0	0
3441:	0	0	1	0	0	0	0	0
3449:	0	0	0	1	0	0	0	0
3457:	0	0	0	0	0	0	0	0
3465:	0	0	0	0	0	0	0	0
3473:	0	0	0	0	0	0	0	0
3481:	0	0	0	0	0	0	2	0
3489:	0	0	0	0	0	1	0	0
3497:	0	1	0	0	0	1	0	0
3505:	0	0	0	0	0	0	0	0
3513:	0	0	0	0	0	0	0	0
3521:	0	0	0	0	0	0	0	0
3529:	2	0	0	0	1	1	0	0
3537:	0	0	0	0	1	0	0	0
3545:	0	0	1	0	0	0	0	0
3553:	0	0	0	0	1	0	0	0
3561:	0	0	0	0	0	0	0	1
3569:	0	0	0	0	0	0	0	0
3577:	1	0	0	0	1	0	0	0
3585:	0	0	0	0	0	0	0	0
3593:	0	0	0	0	0	0	0	1
3601:	0	0	0	0	0	0	0	0
3609:	0	0	0	0	0	2	0	0
3617:	0	0	0	0	0	1	0	0
3625:	0	0	0	0	0	0	0	0
3633:	0	0	0	0	0	0	0	0
3641:	0	0	0	0	0	0	0	0
3649:	0	0	0	0	0	0	1	0
3657:	0	0	0	0	0	0	0	0
3665:	0	1	0	0	1	1	0	0
3673:	0	0	0	1	0	0	0	0
3681:	0	0	0	0	0	0	0	1
3689:	0	0	1	0	0	0	0	0
3697:	0	0	0	0	0	0	0	0
3705:	0	0	0	0	0	0	0	0
3713:	0	1	1	0	0	0	0	0
3721:	0	0	0	0	0	2	0	2
3729:	0	0	0	0	0	0	0	0
3737:	0	0	0	0	0	1	0	0
3745:	0	0	0	0	0	0	0	0
3753:	0	0	1	0	0	0	0	0
3761:	0	1	0	0	0	0	0	0
3769:	0	1	0	0	0	0	0	0
3777:	0	0	0	0	0	0	0	0
3785:	0	0	0	0	0	0	0	0
3793:	0	1	0	0	0	0	0	0
3801:	0	0	0	1	0	1	0	0
3809:	0	0	0	0	1	0	0	0
3817:	0	0	0	0	0	0	0	0

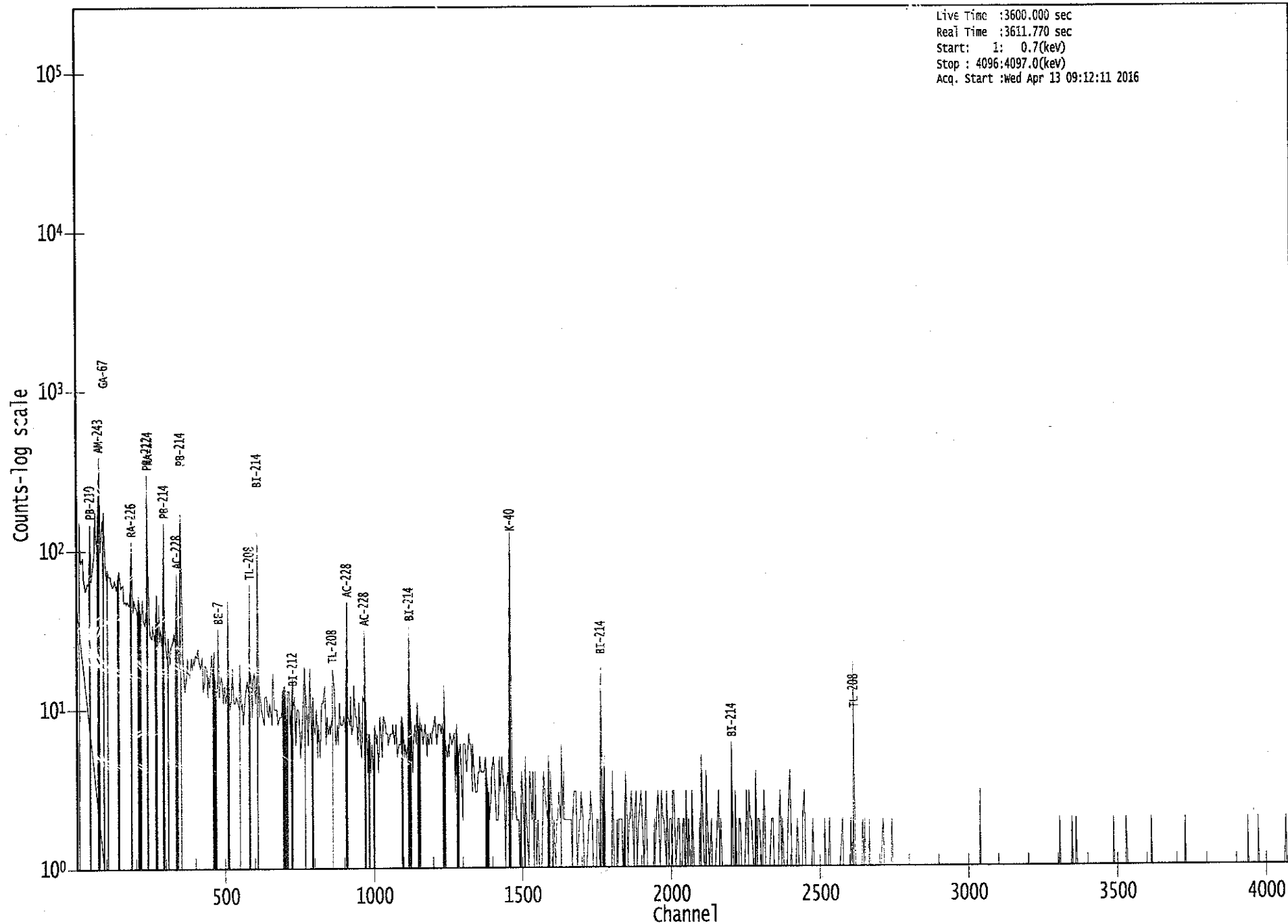
3825: 0 0 0 0 0 1 0 1

Sample Title: SEDIMENT 2016-03-16B

Channel	-----	-----	-----	-----	-----	-----	-----	-----
3833:	0	0	0	0	0	0	0	0
3841:	0	1	0	0	0	0	0	1
3849:	0	0	0	1	0	0	0	0
3857:	0	0	0	1	0	0	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	0
3881:	0	0	0	0	0	0	1	0
3889:	0	0	0	0	1	0	1	0
3897:	1	0	0	0	0	0	0	0
3905:	0	0	0	0	0	0	0	0
3913:	0	0	0	0	1	0	0	0
3921:	0	0	1	0	0	0	0	0
3929:	0	0	0	0	0	0	0	0
3937:	0	2	0	0	0	0	0	0
3945:	0	0	0	0	0	0	0	0
3953:	0	0	0	0	0	0	0	0
3961:	0	0	0	1	0	0	0	0
3969:	0	0	0	1	2	0	0	0
3977:	0	0	0	0	0	0	1	0
3985:	0	0	0	0	0	0	0	0
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	1	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	1	0	0	1
4033:	0	0	0	0	0	0	0	1
4041:	0	0	0	0	0	0	0	0
4049:	0	0	0	0	0	0	1	0
4057:	1	0	0	0	0	1	0	0
4065:	0	0	2	0	0	0	0	0
4073:	0	0	0	0	0	0	0	0
4081:	0	0	0	0	0	0	0	0
4089:	0	0	0	0	0	0	1	0

0000035701.CNF

Live Time :3600.000 sec
 Real Time :3611.770 sec
 Start: 1: 0.7(kev)
 Stop : 4096:4097.0(kev)
 Acq. Start :Wed Apr 13 09:12:11 2016



ROI Type: 1

ROI Type: 2

Analysis Report for 1603102-06
SEDIMENT 2016-03-16B DUP

GAMMA SPECTRUM ANALYSIS

Sample Identification	: 1603102-06
Sample Description	: SEDIMENT 2016-03-16B DUP
Sample Type	: SOIL
Sample Size	: 5.360E+02 grams
Facility	: Countroom
Sample Taken On	: 3/16/2016 1:45:59PM
Acquisition Started	: 4/13/2016 10:13:02AM
Procedure	: GAS-1402 pCi
Operator	: Administrator
Detector Name	: GE3
Geometry	: GAS-1402
Live Time	: 3600.0 seconds
Real Time	: 3611.4 seconds
Dead Time	: 0.32 %
Peak Locate Threshold	: 2.50
Peak Locate Range (in channels)	: 1 - 4096
Peak Area Range (in channels)	: 9 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 10/25/2014
Efficiency Calibration Used Done On	: 10/25/2014
Efficiency Calibration Description	:
Sample Number	: 35710

PEAK-TO-TOTAL CALIBRATION REPORT

Peak-to-Total Efficiency Calibration Equation

AK
4/13/16

Analysis Report for 1603102-06

SEDIMENT 2016-02-16B DUP

PEAK LOCATE REPORT

Peak Locate Performed on : 4/13/2016 11:13:14AM
Peak Locate From Channel : 1
Peak Locate To Channel : 4096
Peak Search Sensitivity : 2.50

Peak No.	Energy (keV)	Centroid Channel	Centroid Uncertainty	Peak Significance
1	24.22	24.46	0.0000	0.00
2	46.63	46.86	0.0000	0.00
3	62.99	63.21	0.0000	0.00
4	74.94	75.15	0.0000	0.00
5	77.78	77.99	0.0000	0.00
6	88.34	88.54	0.0000	0.00
7	128.04	128.22	0.0000	0.00
8	167.33	167.50	0.0000	0.00
9	185.96	186.11	0.0000	0.00
10	198.58	198.83	0.0000	0.00
11	238.98	239.10	0.0000	0.00
12	242.23	242.36	0.0000	0.00
13	270.34	270.45	0.0000	0.00
14	277.96	278.07	0.0000	0.00
15	295.69	295.79	0.0000	0.00
16	300.61	300.70	0.0000	0.00
17	338.68	338.75	0.0000	0.00
18	352.38	352.45	0.0000	0.00
19	459.17	459.19	0.0000	0.00
20	462.85	462.87	0.0000	0.00
21	478.18	478.18	0.0000	0.00
22	511.55	511.54	0.0000	0.00
23	583.15	583.10	0.0000	0.00
24	609.54	609.49	0.0000	0.00
25	728.02	727.90	0.0000	0.00
26	768.53	768.40	0.0000	0.00
27	786.12	785.98	0.0000	0.00
28	794.79	794.64	0.0000	0.00
29	865.00	864.83	0.0000	0.00
30	911.39	911.19	0.0000	0.00
31	969.23	969.01	0.0000	0.00
32	1091.59	1091.32	0.0000	0.00
33	1121.04	1120.75	0.0000	0.00
34	1218.18	1217.85	0.0000	0.00
35	1432.50	1432.09	0.0000	0.00
36	1460.89	1460.46	0.0000	0.00
37	1531.64	1531.19	0.0000	0.00
38	1593.29	1592.82	0.0000	0.00
39	1626.69	1626.21	0.0000	0.00
40	1630.34	1629.85	0.0000	0.00
41	1659.46	1658.97	0.0000	0.00
42	1730.78	1730.26	0.0000	0.00

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

<i>Peak No.</i>	<i>Energy (keV)</i>	<i>Centroid Channel</i>	<i>Centroid Uncertainty</i>	<i>Peak Significance</i>
43	1764.27	1763.74	0.0000	0.00
44	1874.00	1873.43	0.0000	0.00
45	1973.17	1972.57	0.0000	0.00
46	2103.87	2103.23	0.0000	0.00
47	2614.39	2613.61	0.0000	0.00

? = Adjacent peak noted
Errors quoted at 2.000sigma

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/13/2016 11:13:14AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
	1	24.22	21 -	29	24.46	8.05E+01	81.10	9.51E+02	6.38
	2	46.63	44 -	50	46.86	1.03E+02	71.93	8.68E+02	1.08
	3	62.99	59 -	67	63.21	1.72E+02	100.94	1.47E+03	1.71
M	4	74.94	71 -	82	75.15	2.49E+02	78.06	9.46E+02	1.66
m	5	77.78	71 -	82	77.99	4.76E+02	84.70	8.87E+02	1.67
	6	88.34	86 -	91	88.54	8.59E+01	79.81	1.20E+03	1.09
	7	128.04	125 -	131	128.22	5.71E+01	64.33	7.12E+02	2.36
	8	167.33	165 -	170	167.50	5.96E+01	47.48	4.05E+02	2.60
	9	185.96	182 -	190	186.11	1.56E+02	72.24	7.09E+02	1.89
	10	198.68	195 -	203	198.83	6.80E+01	66.75	6.44E+02	6.22
M	11	238.98	233 -	246	239.10	5.33E+02	56.63	2.88E+02	1.75
m	12	242.23	233 -	246	242.36	1.67E+02	62.99	2.82E+02	2.08
M	13	270.34	267 -	283	270.45	5.41E+01	43.24	3.24E+02	2.24
m	14	277.96	267 -	283	278.07	3.49E+01	47.54	3.31E+02	2.82
M	15	295.69	291 -	306	295.79	2.52E+02	42.11	1.81E+02	1.75
m	16	300.61	291 -	306	300.70	6.79E+01	41.54	2.30E+02	2.36
	17	338.68	335 -	343	338.75	8.44E+01	49.25	3.15E+02	2.09
	18	352.38	348 -	356	352.45	3.94E+02	58.20	2.77E+02	1.97
M	19	459.17	458 -	467	459.19	1.56E+01	12.45	4.11E+01	2.09
m	20	462.85	458 -	467	462.87	2.90E+01	26.59	1.15E+02	2.09
	21	478.18	474 -	482	478.18	8.56E+01	41.81	2.17E+02	1.35
	22	511.55	507 -	516	511.54	1.10E+02	40.17	1.63E+02	1.86
	23	583.15	578 -	587	583.10	1.21E+02	42.59	1.90E+02	1.89
	24	609.54	608 -	614	609.49	3.00E+02	46.80	1.32E+02	2.07
	25	728.02	723 -	732	727.90	3.50E+01	30.64	1.12E+02	1.72
	26	768.53	764 -	772	768.40	3.95E+01	29.22	1.05E+02	2.90
	27	786.12	783 -	789	785.98	1.77E+01	18.86	5.06E+01	3.04
	28	794.79	790 -	799	794.64	2.69E+01	25.20	7.61E+01	2.22
	29	865.00	858 -	872	864.83	4.22E+01	35.04	1.08E+02	11.27
	30	911.39	907 -	916	911.19	9.25E+01	33.62	1.05E+02	2.42
	31	969.23	966 -	973	969.01	4.99E+01	24.00	6.02E+01	1.75
	32	1091.59	1086 -	1095	1091.32	2.32E+01	19.29	3.95E+01	4.29
	33	1121.04	1116 -	1126	1120.75	6.35E+01	27.95	6.69E+01	2.14
	34	1218.18	1212 -	1222	1217.85	2.24E+01	27.35	8.71E+01	2.76
	35	1432.50	1427 -	1436	1432.09	1.50E+01	11.40	1.00E+01	4.62
	36	1460.89	1456 -	1464	1460.46	3.60E+02	38.32	4.53E+00	2.49
	37	1531.64	1529 -	1534	1531.19	8.15E+00	7.00	3.70E+00	2.36
	38	1593.29	1590 -	1597	1592.82	1.03E+01	13.42	2.14E+01	2.48
M	39	1626.69	1625 -	1633	1626.21	6.94E+00	3.74	2.00E+00	4.60
m	40	1630.34	1625 -	1633	1629.85	1.08E+01	10.00	8.00E+00	4.14

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	FWHM (keV)
41	1659.46	1655 -	1664	1658.97	1.15E+01	10.86	1.11E+01	5.43
42	1730.78	1726 -	1733	1730.26	1.02E+01	9.38	7.57E+00	1.99
43	1764.27	1759 -	1768	1763.74	4.14E+01	18.47	2.52E+01	1.63
44	1874.00	1869 -	1876	1873.43	7.00E+00	5.29	0.00E+00	3.00
45	1973.17	1969 -	1975	1972.57	7.00E+00	5.29	0.00E+00	2.22
46	2103.87	2099 -	2107	2103.23	9.50E+00	9.82	9.00E+00	1.19
47	2614.39	2609 -	2617	2613.61	4.10E+01	12.81	0.00E+00	2.25

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

PEAK ANALYSIS REPORT

Peak Analysis Performed on : 4/13/2016 11:13:14AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
1	24.22	21 -	29	8.05E+01	81.10	9.51E+02	6.50E+01
2	46.63	44 -	50	1.03E+02	71.93	8.68E+02	5.67E+01
3	62.99	59 -	67	1.72E+02	100.94	1.47E+03	8.01E+01
M 4	74.94	71 -	82	2.49E+02	78.06	9.46E+02	5.06E+01
m 5	77.78	71 -	82	4.76E+02	84.70	8.87E+02	4.90E+01
6	88.34	86 -	91	8.59E+01	79.81	1.20E+03	6.38E+01
7	128.04	125 -	131	5.71E+01	64.33	7.12E+02	5.14E+01
8	167.33	165 -	170	5.96E+01	47.48	4.05E+02	3.69E+01
9	185.96	182 -	190	1.56E+02	72.24	7.09E+02	2.48E+01
10	198.68	195 -	203	6.80E+01	66.75	6.44E+02	5.32E+01
M 11	238.98	233 -	246	5.33E+02	56.63	2.88E+02	2.79E+01
m 12	242.23	233 -	246	1.67E+02	62.99	2.82E+02	2.76E+01
M 13	270.34	267 -	283	5.41E+01	43.24	3.24E+02	2.96E+01
m 14	277.96	267 -	283	3.49E+01	47.54	3.31E+02	2.99E+01
M 15	295.69	291 -	306	2.52E+02	42.11	1.81E+02	2.21E+01
m 16	300.61	291 -	306	6.79E+01	41.54	2.30E+02	2.49E+01
17	338.68	335 -	343	8.44E+01	49.25	3.15E+02	3.76E+01
18	352.38	348 -	356	3.94E+02	58.20	2.77E+02	3.50E+01
M 19	459.17	458 -	467	1.56E+01	12.45	4.11E+01	1.05E+01
m 20	462.85	458 -	467	2.90E+01	26.59	1.15E+02	1.77E+01

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

Peak No.	Energy (keV)	ROI start	ROI end	Net Peak Area	Net Area Uncertainty	Continuum Counts	Critical Level
21	478.18	474 -	482	8.56E+01	41.81	2.17E+02	3.08E+01
22	511.55	507 -	516	1.10E+02	40.17	1.63E+02	2.82E+01
23	583.15	578 -	587	1.21E+02	42.59	1.90E+02	3.00E+01
24	609.54	604 -	614	3.00E+02	46.80	1.32E+02	2.59E+01
25	728.02	723 -	732	3.50E+01	30.64	1.12E+02	2.32E+01
26	768.53	764 -	772	3.95E+01	29.22	1.05E+02	2.17E+01
27	786.12	783 -	789	1.77E+01	18.86	5.06E+01	1.39E+01
28	794.79	790 -	799	2.69E+01	25.20	7.61E+01	1.89E+01
29	865.00	858 -	872	4.22E+01	35.04	1.08E+02	2.67E+01
30	911.39	907 -	916	9.25E+01	33.62	1.05E+02	2.27E+01
31	969.23	966 -	973	4.99E+01	24.00	6.02E+01	1.59E+01
32	1091.59	1086 -	1095	2.32E+01	19.29	3.95E+01	1.37E+01
33	1121.04	1116 -	1126	6.35E+01	27.95	6.69E+01	1.89E+01
34	1218.18	1212 -	1222	2.24E+01	27.35	8.71E+01	2.11E+01
35	1432.50	1427 -	1436	1.50E+01	11.40	1.00E+01	6.88E+00
36	1460.89	1456 -	1464	3.60E+02	38.32	4.53E+00	4.45E+00
37	1531.64	1529 -	1534	8.15E+00	7.00	3.70E+00	3.33E+00
38	1593.29	1590 -	1597	1.03E+01	13.42	2.14E+01	9.69E+00
M 39	1626.69	1625 -	1633	6.94E+00	3.74	2.00E+00	2.33E+00
m 40	1630.34	1625 -	1633	1.08E+01	10.00	8.00E+00	4.65E+00
41	1659.46	1655 -	1664	1.15E+01	10.86	1.11E+01	6.98E+00
42	1730.78	1726 -	1733	1.02E+01	9.38	7.57E+00	5.64E+00
43	1764.27	1759 -	1768	4.14E+01	18.47	2.52E+01	1.09E+01
44	1874.00	1869 -	1876	7.00E+00	5.29	0.00E+00	0.00E+00
45	1973.17	1969 -	1975	7.00E+00	5.29	0.00E+00	0.00E+00
46	2103.87	2099 -	2107	9.50E+00	9.82	9.00E+00	6.29E+00
47	2614.39	2609 -	2617	4.10E+01	12.81	0.00E+00	0.00E+00

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

PEAK WITH NID REPORT

Peak Analysis Performed on : 4/13/2016 11:13:14AM

Peak Analysis From Channel : 1

Peak Analysis To Channel : 4096

Tentative NID Library : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

Peak Match Tolerance : 1.000 keV

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

	Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
	1	24.22	21 -	29	24.46	8.05E+01	81.10	9.51E+02	.....
	2	46.63	44 -	50	46.86	1.03E+02	71.93	8.68E+02	PB-210
	3	62.99	59 -	67	63.21	1.72E+02	100.94	1.47E+03	TH-230
									TH-234
M	4	74.94	71 -	82	75.15	2.49E+02	78.06	9.46E+02	AM-243
m	5	77.78	71 -	82	77.99	4.76E+02	84.70	8.87E+02	TI-44
	6	88.34	86 -	91	88.54	8.59E+01	79.81	1.20E+03	LU-176
									CD-109
									SN-126
	7	128.04	125 -	131	128.22	5.71E+01	64.33	7.12E+02	.....
	8	167.33	165 -	170	167.50	5.96E+01	47.48	4.05E+02	.....
	9	185.96	182 -	190	186.11	1.56E+02	72.24	7.09E+02	RA-226
	10	198.68	195 -	203	198.83	6.80E+01	66.75	6.44E+02	.....
M	11	238.98	233 -	246	239.10	5.33E+02	56.63	2.88E+02	PB-212
m	12	242.23	233 -	246	242.36	1.67E+02	62.99	2.82E+02	.....
M	13	270.34	267 -	283	270.45	5.41E+01	43.24	3.24E+02	.....
m	14	277.96	267 -	283	278.07	3.49E+01	47.54	3.31E+02	CM-243
									NP-239
M	15	295.69	291 -	306	295.79	2.52E+02	42.11	1.81E+02	PB-214
m	16	300.61	291 -	306	300.70	6.79E+01	41.54	2.30E+02	GA-67
									PB-212
									BI-210M
	17	338.68	335 -	343	338.75	8.44E+01	49.25	3.15E+02	AC-228
	18	352.38	348 -	356	352.45	3.94E+02	58.20	2.77E+02	PB-214
M	19	459.17	458 -	467	459.19	1.56E+01	12.45	4.11E+01	.....
m	20	462.85	453 -	467	462.87	2.90E+01	26.59	1.15E+02	SB-125
	21	478.18	474 -	482	478.18	8.56E+01	41.81	2.17E+02	BE-7
	22	511.55	507 -	516	511.54	1.10E+02	40.17	1.63E+02	.....
	23	583.15	578 -	587	583.10	1.21E+02	42.59	1.90E+02	TL-208
	24	609.54	604 -	614	609.49	3.00E+02	46.80	1.32E+02	BI-214
	25	728.02	723 -	732	727.90	3.50E+01	30.64	1.12E+02	BI-212
	26	768.53	764 -	772	768.40	3.95E+01	29.22	1.05E+02	.....
	27	786.12	783 -	789	785.98	1.77E+01	18.86	5.06E+01	.....
	28	794.79	790 -	799	794.64	2.69E+01	25.20	7.61E+01	.....
	29	865.00	858 -	872	864.83	4.22E+01	35.04	1.08E+02	.....
	30	911.39	907 -	916	911.19	9.25E+01	33.62	1.05E+02	AC-228
									LU-172
	31	969.23	966 -	973	969.01	4.99E+01	24.00	6.02E+01	AC-228
	32	1091.59	1086 -	1095	1091.32	2.32E+01	19.29	3.95E+01	.....
	33	1121.04	1116 -	1126	1120.75	6.35E+01	27.95	6.69E+01	TA-182
									SC-46
									BI-214
	34	1218.18	1212 -	1222	1217.85	2.24E+01	27.35	8.71E+01	.....
	35	1432.50	1427 -	1436	1432.09	1.50E+01	11.40	1.00E+01	.....
	36	1460.89	1456 -	1464	1460.46	3.60E+02	38.32	4.53E+00	K-40
	37	1531.64	1529 -	1534	1531.19	8.15E+00	7.00	3.70E+00	.....
	38	1593.29	1590 -	1597	1592.82	1.03E+01	13.42	2.14E+01	.....
	39	1626.69	1625 -	1633	1626.21	6.94E+00	3.74	2.00E+00	.....
M	40	1630.34	1625 -	1633	1629.85	1.08E+01	10.00	8.00E+00	.....
m	41	1659.46	1653 -	1664	1658.97	1.15E+01	10.86	1.11E+01	.....
	42	1730.78	1726 -	1733	1730.26	1.02E+01	9.38	7.57E+00	.....
	43	1764.27	1759 -	1768	1763.74	4.14E+01	18.47	2.52E+01	BI-214
	44	1874.00	1869 -	1876	1873.43	7.00E+00	5.29	0.00E+00	.....
	45	1973.17	1969 -	1975	1972.57	7.00E+00	5.29	0.00E+00	.....

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

Peak No.	Energy (keV)	ROI start	ROI end	Peak Centroid	Net Peak Area	Net Area Uncertainty	Continuum Counts	Tentative Nuclide
46	2103.87	2099 -	2107	2103.23	9.50E+00	9.82	9.00E+00	.....
47	2614.39	2609 -	2617	2613.61	4.10E+01	12.81	0.00E+00	TL-208

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

PEAK EFFICIENCY REPORT

Peak Analysis Performed on : 4/13/2016 11:13:14AM

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	1	24.22	8.05E+01	81.10	1.93E-03	1.58E-03
	2	46.63	1.03E+02	71.93	1.51E-02	1.58E-03
	3	62.99	1.72E+02	100.94	2.15E-02	1.70E-03
M	4	74.94	2.49E+02	78.06	2.36E-02	2.09E-03
m	5	77.78	4.76E+02	84.70	2.39E-02	2.19E-03
	6	88.34	8.59E+01	79.81	2.44E-02	2.52E-03
	7	128.04	5.71E+01	64.33	2.26E-02	1.70E-03
	8	167.33	5.96E+01	47.48	1.96E-02	1.50E-03
	9	185.96	1.56E+02	72.24	1.83E-02	1.42E-03
	10	198.68	6.80E+01	66.75	1.75E-02	1.36E-03
M	11	238.98	5.33E+02	56.63	1.52E-02	1.18E-03
m	12	242.23	1.67E+02	62.99	1.50E-02	1.16E-03
M	13	270.34	5.41E+01	43.24	1.38E-02	1.04E-03
m	14	277.96	3.49E+01	47.54	1.35E-02	1.00E-03
M	15	295.69	2.52E+02	42.11	1.28E-02	9.73E-04
m	16	300.61	5.79E+01	41.54	1.26E-02	9.66E-04
	17	338.68	8.44E+01	49.25	1.14E-02	9.12E-04
	18	352.38	3.94E+02	58.20	1.10E-02	8.93E-04
M	19	459.17	1.56E+01	12.45	8.79E-03	7.70E-04
m	20	462.85	2.90E+01	26.59	8.73E-03	7.66E-04
	21	478.18	8.56E+01	41.81	8.49E-03	7.51E-04
	22	511.55	1.10E+02	40.17	8.00E-03	7.18E-04
	23	583.15	1.21E+02	42.59	7.14E-03	6.46E-04
	24	609.54	3.00E+02	46.80	6.87E-03	6.20E-04
	25	728.02	3.50E+01	30.64	5.89E-03	5.14E-04
	26	768.53	3.95E+01	29.22	5.62E-03	4.80E-04
	27	786.12	1.77E+01	13.86	5.51E-03	4.66E-04
	28	794.79	2.69E+01	25.20	5.46E-03	4.59E-04

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

	Peak No.	Energy (keV)	Net Peak Area	Net Area Uncertainty	Peak Efficiency	Efficiency Uncertainty
	29	865.00	4.22E+01	35.04	5.07E-03	4.02E-04
	30	911.39	9.25E+01	33.62	4.85E-03	3.72E-04
	31	969.23	4.99E+01	24.00	4.60E-03	3.61E-04
	32	1091.59	2.32E+01	19.29	4.17E-03	3.39E-04
	33	1121.04	6.35E+01	27.95	4.07E-03	3.33E-04
	34	1218.18	2.24E+01	27.35	3.81E-03	3.14E-04
	35	1432.50	1.50E+01	11.40	3.84E-03	2.74E-04
	36	1460.89	3.60E+02	38.32	3.29E-03	2.69E-04
	37	1531.64	8.15E+00	7.00	3.17E-03	2.59E-04
	38	1593.29	1.03E+01	13.42	3.08E-03	2.50E-04
M	39	1626.69	6.94E+00	3.74	3.03E-03	2.44E-04
m	40	1630.34	1.08E+01	10.00	3.03E-03	2.44E-04
	41	1659.46	1.15E+01	10.86	2.99E-03	2.40E-04
	42	1730.78	1.02E+01	9.38	2.90E-03	2.29E-04
	43	1764.27	4.14E+01	18.47	2.86E-03	2.24E-04
	44	1874.00	7.00E+00	5.29	2.74E-03	2.13E-04
	45	1973.17	7.00E+00	5.29	2.64E-03	2.13E-04
	46	2103.87	9.50E+00	9.82	2.54E-03	2.13E-04
	47	2614.39	4.10E+01	12.81	2.24E-03	2.13E-04

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000 sigma

BACKGROUND SUBTRACT REPORT

Peak Analysis Performed on : 4/13/2016 11:13:14AM

Env. Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000035178.CNF

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
	1	24.22	8.05E+01	81.10			8.05E+01	8.11E+01
	2	46.63	1.03E+02	71.93	3.04E+01	2.01E+01	7.27E+01	7.47E+01
	3	62.99	1.72E+02	100.94	5.41E+01	5.13E+00	1.17E+02	1.01E+02
M	4	74.94	2.49E+02	78.06			2.49E+02	7.81E+01
m	5	77.78	4.76E+02	84.70			4.76E+02	8.47E+01
	6	88.34	8.59E+01	79.81	3.05E+00	2.15E+00	8.28E+01	7.98E+01
	7	128.04	5.71E+01	64.33			5.71E+01	6.43E+01
	8	167.33	5.96E+01	47.48			5.96E+01	4.75E+01
	9	185.96	1.56E+02	72.24	3.82E+01	5.87E+00	1.17E+02	7.25E+01
	10	198.68	6.80E+01	66.75	1.24E+01	6.03E+00	5.56E+01	6.70E+01
M	11	238.98	5.33E+02	56.63	1.06E+01	5.71E+00	5.23E+02	5.69E+01

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Subtracted Area	Subtracted Uncert.
m	12	242.23	1.67E+02	62.99			1.67E+02	6.30E+01
M	13	270.34	5.41E+01	43.24			5.41E+01	4.32E+01
m	14	277.96	3.49E+01	47.54			3.49E+01	4.75E+01
M	15	295.69	2.52E+02	42.11			2.52E+02	4.21E+01
m	16	300.61	6.79E+01	41.54			6.79E+01	4.15E+01
	17	338.68	8.44E+01	49.25			8.44E+01	4.93E+01
	18	352.38	3.94E+02	58.20	0.00E+00	0.00E+00	3.94E+02	5.82E+01
M	19	459.17	1.56E+01	12.45			1.56E+01	1.24E+01
m	20	462.85	2.90E+01	26.59			2.90E+01	2.66E+01
	21	478.18	8.56E+01	41.81			8.56E+01	4.18E+01
	22	511.55	1.10E+02	40.17	5.95E+01	4.92E+00	5.01E+01	4.05E+01
	23	583.15	1.21E+02	42.59	5.06E+00	2.98E+00	1.16E+02	4.27E+01
	24	609.54	3.00E+02	46.80	2.01E+00	3.84E+00	2.98E+02	4.70E+01
	25	728.02	3.50E+01	30.64			3.50E+01	3.06E+01
	26	768.53	3.95E+01	29.22			3.95E+01	2.92E+01
	27	786.12	1.77E+01	18.86			1.77E+01	1.89E+01
	28	794.79	2.69E+01	25.20			2.69E+01	2.52E+01
	29	865.00	4.22E+01	35.04			4.22E+01	3.50E+01
	30	911.39	9.25E+01	33.62	2.99E+00	2.93E+00	8.95E+01	3.37E+01
	31	969.23	4.99E+01	24.00			4.99E+01	2.40E+01
	32	1091.59	2.32E+01	19.29			2.32E+01	1.93E+01
	33	1121.04	6.35E+01	27.95			6.35E+01	2.80E+01
	34	1218.18	2.24E+01	27.35			2.24E+01	2.73E+01
	35	1432.50	1.50E+01	11.40			1.50E+01	1.14E+01
	36	1460.89	3.60E+02	38.32			3.60E+02	3.83E+01
	37	1531.64	8.15E+00	7.00			8.15E+00	7.00E+00
	38	1593.29	1.03E+01	13.42			1.03E+01	1.34E+01
M	39	1626.69	6.94E+00	3.74			6.94E+00	3.74E+00
m	40	1630.34	1.08E+01	10.00			1.08E+01	1.00E+01
	41	1659.46	1.15E+01	10.86			1.15E+01	1.09E+01
	42	1730.78	1.02E+01	9.38			1.02E+01	9.38E+00
	43	1764.27	4.14E+01	18.47			4.14E+01	1.85E+01
	44	1874.00	7.00E+00	5.29			7.00E+00	5.29E+00
	45	1973.17	7.00E+00	5.29			7.00E+00	5.29E+00
	46	2103.87	9.50E+00	9.82			9.50E+00	9.82E+00
	47	2614.39	4.10E+01	12.81			4.10E+01	1.28E+01

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

AREA CORRECTION REPORT

REFERENCE PEAK / BKG. SUBTRACT

Peak Analysis Performed on : 4/13/2016 11:13:14AM

Ref. Peak Energy : 0.00

Reference Date :

Peak Ratio : 0.00

Uncertainty : 0.00

Background File : \\OR-GAMMA1\ApexRoot\Countroom\Data\0000035178.CNF

Corrected Area is: Original * Peak Ratio - Background

	Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
	1	24.22	8.05E+01	81.10			8.05E+01	8.11E+01
	2	46.63	1.03E+02	71.93	3.04E+01	2.01E+01	7.27E+01	7.47E+01
	3	62.99	1.72E+02	100.94	5.41E+01	5.13E+00	1.17E+02	1.01E+02
M	4	74.94	2.49E+02	78.06			2.49E+02	7.81E+01
m	5	77.78	4.76E+02	84.70			4.76E+02	8.47E+01
	6	88.34	8.59E+01	79.81	3.05E+00	2.15E+00	8.28E+01	7.98E+01
	7	128.04	5.71E+01	64.33			5.71E+01	6.43E+01
	8	167.33	5.96E+01	47.48			5.96E+01	4.75E+01
	9	185.96	1.56E+02	72.24	3.82E+01	5.87E+00	1.17E+02	7.25E+01
	10	198.68	6.80E+01	66.75	1.24E+01	6.03E+00	5.56E+01	6.70E+01
M	11	238.98	5.33E+02	56.63	1.06E+01	5.71E+00	5.23E+02	5.69E+01
m	12	242.23	1.67E+02	62.99			1.67E+02	6.30E+01
M	13	270.34	5.41E+01	43.24			5.41E+01	4.32E+01
m	14	277.96	3.49E+01	47.54			3.49E+01	4.75E+01
M	15	295.69	2.52E+02	42.11			2.52E+02	4.21E+01
m	16	300.61	6.79E+01	41.54			6.79E+01	4.15E+01
	17	338.68	8.44E+01	49.25			8.44E+01	4.93E+01
	18	352.38	3.94E+02	58.20	0.00E+00	0.00E+00	3.94E+02	5.82E+01
M	19	459.17	1.56E+01	12.45			1.56E+01	1.24E+01
m	20	462.85	2.90E+01	26.59			2.90E+01	2.66E+01
	21	478.18	8.56E+01	41.81			8.56E+01	4.18E+01
	22	511.55	1.10E+02	40.17	5.95E+01	4.92E+00	5.01E+01	4.05E+01
	23	583.15	1.21E+02	42.59	5.06E+00	2.98E+00	1.16E+02	4.27E+01
	24	609.54	3.00E+02	46.80	2.01E+00	3.84E+00	2.98E+02	4.70E+01
	25	728.02	3.50E+01	30.64			3.50E+01	3.06E+01
	26	768.53	3.95E+01	29.22			3.95E+01	2.92E+01
	27	786.12	1.77E+01	18.86			1.77E+01	1.89E+01
	28	794.79	2.69E+01	25.20			2.69E+01	2.52E+01
	29	865.00	4.22E+01	35.04			4.22E+01	3.50E+01
	30	911.39	9.25E+01	33.62	2.99E+00	2.93E+00	8.95E+01	3.37E+01
	31	969.23	4.99E+01	24.00			4.99E+01	2.40E+01
	32	1091.59	2.32E+01	19.29			2.32E+01	1.93E+01
	33	1121.04	6.35E+01	27.95			6.35E+01	2.80E+01
	34	1218.18	2.24E+01	27.35			2.24E+01	2.73E+01
	35	1432.50	1.50E+01	11.40			1.50E+01	1.14E+01
	36	1460.89	3.60E+02	38.32			3.60E+02	3.83E+01
	37	1531.64	8.15E+00	7.00			8.15E+00	7.00E+00
	38	1593.29	1.03E+01	13.42			1.03E+01	1.34E+01
M	39	1626.69	6.94E+00	3.74			6.94E+00	3.74E+00
m	40	1630.34	1.08E+01	10.00			1.08E+01	1.00E+01
	41	1659.46	1.15E+01	10.86			1.15E+01	1.09E+01

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

Peak No.	Energy (keV)	Original Area	Orig. Area Uncertainty	Ambient Background	Backgr. Uncert.	Corrected Area	Corrected Uncert.
42	1730.78	1.02E+01	9.38			1.02E+01	9.38E+00
43	1764.27	4.14E+01	18.47			4.14E+01	1.85E+01
44	1874.00	7.00E+00	5.29			7.00E+00	5.29E+00
45	1973.17	7.00E+00	5.29			7.00E+00	5.29E+00
46	2103.87	9.50E+00	9.82			9.50E+00	9.82E+00
47	2614.39	4.10E+01	12.81			4.10E+01	1.28E+01

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BE-7	0.945	477.59 *	10.42	1.95E+00	9.66E-01
K-40	0.999	1460.81 *	10.67	1.43E+01	1.95E+00
CD-109	0.985	88.03 *	3.72	1.33E+00	1.29E+00
SN-126	0.910	87.57 *	37.00	1.28E-01	1.25E-01
TL-208	0.882	583.14 *	30.22	7.54E-01	2.85E-01
		860.37	4.48		
		2614.66 *	35.85	7.15E-01	2.34E-01
PB-210	0.997	46.50 *	4.25	1.59E+00	1.64E+00
BI-212	0.682	727.17 *	11.80	7.06E-01	6.21E-01
		1620.62	2.75		
PB-212	0.979	238.63 *	44.60	1.08E+00	1.44E-01
		300.09 *	3.41	2.21E+00	1.36E+00
BI-214	0.910	609.31 *	46.30	1.31E+00	2.38E-01
		1120.29 *	15.10	1.45E+00	6.47E-01
		1764.49 *	15.80	1.28E+00	5.82E-01
		2204.22	4.98		
PB-214	0.966	295.21 *	19.19	1.43E+00	2.64E-01
		351.92 *	37.19	1.34E+00	2.26E-01
RA-226	0.990	186.21 *	3.28	2.74E+00	5.29E+00
AC-228	0.987	338.32 *	11.40	9.08E-01	5.35E-01
		911.07 *	27.70	9.33E-01	3.59E-01
		969.11 *	16.60	9.15E-01	4.46E-01
TH-234	0.986	63.25 *	3.80	2.01E+00	1.74E+00
AM-243	0.989	74.67 *	66.00	2.24E-01	7.28E-02

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

* = Energy line found in the spectrum.

- = Manually added nuclide.

? = Manually edited nuclide.

Energy Tolerance : 1.000 keV

Nuclide confidence index threshold = 0.30

Errors quoted at 2.000sigma

UNIDENTIFIED PEAKS

Peak Locate Performed on : 4/13/2016 11:13:14AM

Peak Locate From Channel : 1

Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
m 1	24.22	2.23561E-02	50.39		
m 5	77.78	1.32158E-01	8.90	Tol.	TI-44
7	128.04	1.58646E-02	56.32		
8	167.33	1.65564E-02	39.83		
10	198.68	1.54428E-02	60.28		
m 12	242.23	4.64577E-02	18.83		
M 13	270.34	1.50316E-02	39.95		
m 14	277.96	9.69117E-03	68.13	Tol.	NP-239 CM-243
M 19	459.17	4.33165E-03	39.92		
m 20	462.85	8.04785E-03	45.89	Tol.	SB-125
22	511.55	1.39259E-02	40.37		
26	768.53	1.09813E-02	36.96	Sum	
27	786.12	4.91925E-03	53.25		
28	794.79	7.48504E-03	46.76	Sum	
29	865.00	1.17289E-02	41.49		
32	1091.59	6.45349E-03	41.51		
34	1218.18	6.23317E-03	60.94	Sum	
35	1432.50	4.16667E-03	38.01		
37	1531.64	2.26389E-03	42.94		
38	1593.23	2.85714E-03	65.22	D-Esc	
M 39	1626.62	1.92765E-03	26.96		
m 40	1630.34	2.99520E-03	46.37		
41	1659.46	3.18627E-03	47.35		
42	1730.78	2.83730E-03	45.92	Sum	
44	1874.00	1.94444E-03	37.80		
45	1973.17	1.94444E-03	37.80		
46	2103.87	2.63889E-03	51.70	S-Esc	

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

M = First peak in a multiplet region
 m = Other peak in a multiplet region
 F = Fitted singlet
 Errors quoted at 2.000sigma

NUCLIDE IDENTIFICATION REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)		Yield(%)	Activity (pCi/grams)	Activity Uncertainty
BE-7	0.94	477.59	*	10.42	1.95E+00	9.66E-01
K-40	0.99	1460.81	*	10.67	1.43E+01	1.95E+00
CD-109	0.98	88.03	*	3.72	1.33E+00	1.29E+00
SN-126	0.91	87.57	*	37.00	1.28E-01	1.25E-01
TL-208	0.88	583.14	*	30.22	7.54E-01	2.85E-01
		860.37		4.48		
		2614.66	*	35.85	7.15E-01	2.34E-01
PB-210	0.99	46.50	*	4.25	1.59E+00	1.64E+00
BI-212	0.68	727.17	*	11.80	7.06E-01	6.21E-01
		1620.62		2.75		
PB-212	0.97	238.63	*	44.60	1.08E+00	1.44E-01
		300.09	*	3.41	2.21E+00	1.36E+00
BI-214	0.91	609.31	*	46.30	1.31E+00	2.38E-01
		1120.29	*	15.10	1.45E+00	6.47E-01
		1764.49	*	15.80	1.28E+00	5.82E-01
		2204.22		4.98		
PB-214	0.96	295.21	*	19.19	1.43E+00	2.64E-01
		351.92	*	37.19	1.34E+00	2.26E-01
RA-226	0.99	186.21	*	3.28	2.74E+00	5.29E+00
AC-228	0.98	338.32	*	11.40	9.08E-01	5.35E-01
		911.07	*	27.70	9.33E-01	3.59E-01
		969.11	*	16.60	9.15E-01	4.46E-01
TH-234	0.98	63.29	*	3.80	2.01E+00	1.74E+00
AM-243	0.98	74.67	*	66.00	2.24E-01	7.28E-02

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

* = Energy line found in the spectrum.
 - = Manually added nuclide.
 ? = Manually edited nuclide.
 @ = Energy line not used for Weighted Mean Activity
 Energy Tolerance : 1.000 keV
 Nuclide confidence index threshold = 0.30
 Errors quoted at 2.000sigma

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
BE-7	0.945	1.95E+00	9.66E-01	
K-40	0.999	1.43E+01	1.95E+00	
? CD-109	0.985	1.33E+00	1.29E+00	
? SN-126	0.910	1.28E-01	1.25E-01	
TL-208	0.882	7.31E-01	1.81E-01	
PB-210	0.997	1.59E+00	1.64E+00	
BI-212	0.682	7.06E-01	6.21E-01	
PB-212	0.979	1.09E+00	1.44E-01	
BI-214	0.910	1.32E+00	2.09E-01	
PB-214	0.966	1.38E+00	1.72E-01	
RA-226	0.990	2.74E+00	5.29E+00	
AC-228	0.987	9.22E-01	2.48E-01	
TH-234	0.986	2.01E+00	1.74E+00	
AM-243	0.989	2.24E-01	7.28E-02	

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis
 @ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 2.000sigma

SEDIMENT 2016-03-16B DUP

UNIDENTIFIED PEAKS

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Peak Locate Performed on      : 4/13/2016 11:13:14AM
Peak Locate From Channel     : 1
Peak Locate To Channel       : 4096
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Peak No.	Energy (keV)	Peak Size (CPS)	Peak CPS (%) Uncertainty	Peak Type	Tolerance Nuclide
	1	24.22	2.23561E-02		
m	5	77.78	1.32158E-01		TI-44
	7	128.04	1.58646E-02		
	8	167.33	1.65564E-02		
	10	198.68	1.54428E-02		
m	12	242.23	4.64577E-02		
M	13	270.34	1.50316E-02		
m	14	277.96	9.69117E-03		NP-239
					CM-243
M	19	459.17	4.33165E-03		
m	20	462.85	8.04785E-03		SB-125
	22	511.55	1.39259E-02		
	26	768.53	1.09813E-02		
	27	786.12	4.91925E-03		
	28	794.79	7.48504E-03		
	29	865.00	1.17289E-02		
	32	1091.59	6.45349E-03		
	34	1218.18	6.23317E-03		
	35	1432.50	4.16667E-03		
	37	1531.64	2.26389E-03		
	38	1593.29	2.85714E-03		
M	39	1626.69	1.92765E-03		
m	40	1630.34	2.99520E-03		
	41	1659.46	3.18627E-03		
	42	1730.78	2.83730E-03		
	44	1874.00	1.94444E-03		
	45	1973.17	1.94444E-03		
	46	2103.87	2.63839E-03		

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000sigma

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-G\MMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)		Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	BE-7	477.59	*	10.42	1.95E+00	1.46E+00	1.46E+00
+	NA-22	1274.54		99.94	4.35E-03	1.24E-01	1.24E-01
+	NA-24	1368.53		99.99	-2.45E+11	4.62E+11	2.41E+12
		2754.09		99.86	0.00E+00		4.62E+11
+	AL-26	1808.65		99.76	1.94E-02	7.93E-02	7.93E-02
+	K-40	1460.81	*	10.67	1.43E+01	4.63E-01	4.63E-01
+	@ AR-41	1293.64		99.16	1.00E+26	1.00E+26	1.00E+26
+	TI-44	67.88		94.40	1.14E-02	7.00E-02	7.00E-02
		78.34		96.00	2.04E-01		8.90E-02
+	SC-46	889.25		99.98	-1.75E-02	1.13E-01	1.13E-01
		1120.51		99.99	2.52E-01		1.96E-01
+	V-48	983.52		99.98	-3.58E-02	2.82E-01	2.82E-01
		1312.10		97.50	6.05E-02		3.61E-01
+	CR-51	320.08		9.83	4.60E-01	1.35E+00	1.35E+00
+	MN-54	834.83		99.97	-2.98E-02	8.84E-02	8.84E-02
+	CO-56	846.75		99.96	3.76E-02	1.03E-01	1.03E-01
		1037.75		14.03	2.35E-01		8.40E-01
		1238.25		67.00	1.38E-01		2.74E-01
		1771.40		15.51	-1.39E-01		5.71E-01
		2598.48		16.90	-4.71E-02		4.38E-01
+	CO-57	122.06		85.51	5.71E-03	6.08E-02	6.08E-02
		136.48		10.60	-2.95E-01		4.84E-01
+	CO-58	810.76		99.40	-5.51E-02	9.88E-02	9.88E-02
+	FE-59	1099.22		56.50	-1.97E-02	2.60E-01	2.60E-01
		1291.56		43.20	6.20E-02		3.94E-01
+	CO-60	1173.22		100.00	5.77E-02	8.75E-02	1.12E-01
		1332.49		100.00	-6.85E-02		8.75E-02
+	ZN-65	1115.52		50.75	2.83E-02	2.37E-01	2.37E-01
+	GA-67	93.31		35.70	8.18E+01	6.66E+01	6.66E+01
		208.95		2.24	1.43E+03		1.23E+03
		300.22		16.00	-5.56E+02		1.85E+02
+	SE-75	121.11		16.70	1.66E-01	9.56E-02	3.48E-01
		136.00		59.20	-3.60E-02		9.56E-02
		264.65		59.80	2.13E-02		1.25E-01
		279.53		25.20	2.66E-01		3.25E-01
		400.65		11.40	-3.43E-01		7.32E-01
+	RB-82	776.52		13.00	-3.79E-02	1.37E+00	1.37E+00
+	RB-83	520.41		46.00	-5.77E-02	1.72E-01	1.72E-01
		529.64		30.30	8.83E-02		2.95E-01
		552.65		16.40	-1.84E-01		5.22E-01

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	KR-85	513.99	0.43	2.35E+01	2.31E+01
+	SR-85	513.99	99.27	1.38E-01	1.35E-01
+	Y-88	898.02	93.40	-2.91E-02	1.14E-01
		1836.01	99.38	3.04E-02	1.14E-01
+	NB-93M	16.57	9.43	-3.13E+01	7.85E+01
+	NB-94	702.63	100.00	1.03E-02	8.59E-02
		871.10	100.00	1.18E-02	9.13E-02
+	NB-95	765.79	99.81	1.63E-01	1.94E-01
+	NB-95M	235.69	25.00	1.35E+02	8.74E+01
+	ZR-95	724.18	43.70	1.30E-02	2.08E-01
		756.72	55.30	7.47E-02	2.08E-01
+	MO-99	181.06	6.20	1.92E+01	6.48E+02
		739.58	12.80	-3.49E+02	6.48E+02
		778.00	4.50	3.11E+02	2.09E+03
+	RU-103	497.08	89.00	-1.15E-01	1.09E-01
+	RU-106	621.84	9.80	1.06E-01	8.37E-01
+	AG-108M	433.93	89.90	2.03E-03	8.11E-02
		614.37	90.40	-1.02E-02	1.02E-01
		722.95	90.50	1.16E-02	8.59E-02
+	CD-109	88.03	3.72	1.33E+00	2.10E+00
+	AG-110M	657.75	93.14	-8.26E-02	9.00E-02
		677.61	10.53	-1.63E-01	7.94E-01
		706.67	16.46	-4.31E-02	5.32E-01
		763.93	21.98	1.73E-02	4.50E-01
		884.67	71.63	4.81E-02	1.40E-01
		1384.27	23.94	-1.10E-01	4.42E-01
+	CD-113M	263.70	0.02	1.82E+01	2.77E+02
+	SN-113	255.12	1.93	-1.20E+00	1.38E-01
		391.69	64.90	3.80E-02	1.38E-01
+	TE123M	159.00	84.10	-1.11E-02	7.05E-02
+	SB-124	602.71	97.87	-1.94E-02	1.16E-01
		645.85	7.26	-2.00E-02	1.52E+00
		722.78	11.10	1.31E-01	9.65E-01
		1691.02	49.00	8.02E-02	2.33E-01
+	I-125	35.49	6.49	-3.09E-02	2.77E+00
+	SB-125	176.33	6.89	-1.63E-01	2.31E-01
		427.89	29.33	-8.85E-03	2.31E-01
		463.38	10.35	3.14E-01	7.75E-01
		600.56	17.80	-3.87E-02	4.67E-01
		635.90	11.32	5.28E-02	6.97E-01
+	SB-126	414.70	83.30	1.59E-01	3.73E-01
		666.33	99.60	-9.07E-02	4.04E-01
		695.00	99.60	-6.07E-02	3.73E-01
		720.50	53.80	-2.14E-02	7.13E-01
+	SN-126	87.57	37.00	1.28E-01	2.02E-01
+	SB-127	473.00	25.00	-5.37E+00	3.56E+01
		685.20	35.70	1.43E+01	3.56E+01
		783.80	14.70	-3.56E-01	8.94E+01

Analysis Report for 1603102-06

SEDIMENT.2016-03-16B DUP

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	I-129	29.78	57.00	1.81E-01	4.21E-01	4.21E-01
		33.60	13.20	4.13E-01		1.21E+00
		39.58	7.52	4.21E-01		1.36E+00
+	I-131	284.30	6.05	7.08E-02	9.31E-01	1.15E+01
		364.48	81.20	2.84E-01		9.31E-01
		636.97	7.26	6.23E+00		1.21E+01
		722.89	1.80	6.46E+00		4.77E+01
+	TE-132	49.72	13.10	-3.82E+01	2.68E+01	2.10E+02
		228.16	88.00	-4.83E+00		2.68E+01
+	BA-133	81.00	33.00	-7.92E-01	1.71E-01	1.84E-01
		302.84	17.80	1.41E-01		4.08E-01
		356.01	60.00	-5.84E-04		1.71E-01
+	I-133	529.87	86.30	1.19E+08	3.98E+08	3.98E+08
+	XE-133	81.00	38.00	-2.73E+01	6.33E+00	6.33E+00
+	CS-134	563.23	8.33	-2.92E-01	9.32E-02	9.44E-01
		569.32	15.43	1.21E-01		5.63E-01
		604.70	97.60	-1.70E-02		9.32E-02
		795.84	85.40	4.16E-02		1.11E-01
		801.93	8.73	1.30E-01		9.88E-01
+	CS-135	268.24	16.00	-1.06E-02	4.35E-01	4.35E-01
+	@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26
	@	1260.41	28.60	1.00E+26		1.00E+26
	@	1678.03	9.54	1.00E+26		1.00E+26
+	CS-136	153.22	7.46	8.51E-01	3.60E-01	3.05E+00
		163.89	4.61	-1.49E-01		4.53E+00
		176.55	13.56	-2.66E-01		1.68E+00
		273.65	12.66	-9.82E-01		2.39E+00
		340.57	48.50	8.33E-01		7.57E-01
		818.50	99.70	-4.59E-02		3.60E-01
		1048.07	79.60	1.13E-01		5.63E-01
		1235.34	19.70	6.21E-01		3.10E+00
+	CS-137	661.65	85.12	1.25E-02	1.04E-01	1.04E-01
+	LA-138	788.74	34.00	-7.64E-02	1.50E-01	2.35E-01
		1435.80	66.00	-3.18E-03		1.50E-01
+	CE-139	165.85	80.35	6.44E-03	7.20E-02	7.20E-02
+	BA-140	162.64	6.70	-2.44E-01	1.25E+00	3.22E+00
		304.84	4.50	-1.49E-01		6.57E+00
		423.70	3.20	-3.91E+00		8.99E+00
		437.55	2.00	-2.06E+00		1.62E+01
		537.32	25.00	-3.15E-01		1.25E+00
+	LA-140	328.77	20.50	-3.44E-02	4.60E-01	1.45E+00
		487.03	45.50	-7.51E-02		6.81E-01
		815.85	23.50	1.01E-01		1.59E+00
		1596.49	95.49	-2.16E-02		4.60E-01
+	CE-141	145.44	48.40	8.74E-02	2.00E-01	2.00E-01
+	CE-143	57.36	11.80	5.50E+04	2.93E+05	7.21E+05
		293.26	42.00	5.85E+05		2.93E+05
		664.55	5.20	9.34E+05		2.26E+06
+	CE-144	133.54	10.80	-1.61E-01	4.73E-01	4.73E-01

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PM-144	476.78	42.00	2.27E-01	8.00E-02	2.54E-01
		618.01	98.60	-2.02E-02		8.00E-02
		696.49	99.49	-1.48E-02		8.40E-02
+	PM-145	36.85	21.70	1.07E-01	3.02E-01	5.56E-01
		37.36	39.70	9.10E-02		3.02E-01
		42.30	15.10	-1.65E-01		6.08E-01
		72.40	2.31	-6.30E+00		3.19E+00
+	PM-146	453.90	39.94	-2.09E-02	1.87E-01	1.87E-01
		735.90	14.01	3.48E-01		5.81E-01
		747.13	13.10	4.50E-01		7.32E-01
+	ND-147	91.11	28.90	2.27E-01	1.31E+00	1.31E+00
		531.02	13.10	3.97E-01		3.11E+00
+	PM-149	285.90	3.10	2.48E+02	1.22E+04	1.22E+04
+	EU-152	121.78	20.50	2.23E-02	2.37E-01	2.37E-01
		244.69	5.40	-9.22E-02		1.45E+00
		344.27	19.13	1.76E-02		3.51E-01
		778.89	9.20	2.48E-01		9.24E-01
		964.01	10.40	3.34E-01		9.81E-01
		1085.78	7.22	-1.63E-01		9.65E-01
		1112.02	9.60	1.09E-01		1.12E+00
		1407.95	14.94	-3.08E-01		6.39E-01
+	GD-153	97.43	31.30	-1.44E-01	1.71E-01	1.71E-01
		103.18	22.20	-3.16E-02		2.28E-01
+	EU-154	123.07	40.50	-1.20E-03	1.20E-01	1.20E-01
		723.30	19.70	5.38E-02		3.97E-01
		873.19	11.50	2.44E-02		7.55E-01
		996.32	10.30	-3.30E-01		9.07E-01
		1004.76	17.90	3.42E-02		5.26E-01
		1274.45	35.50	1.21E-02		3.44E-01
+	EU-155	86.50	30.90	1.34E-01	2.16E-01	2.16E-01
		105.30	20.70	-4.39E-03		2.29E-01
+	EU-156	811.77	10.40	-5.72E-01	2.60E+00	2.60E+00
		1153.47	7.20	6.75E-01		4.99E+00
		1230.71	8.90	-2.19E+00		4.67E+00
+	HO-166M	184.41	72.60	1.65E-01	9.45E-02	9.45E-02
		280.45	29.60	1.27E-01		2.29E-01
		410.94	11.10	4.56E-02		6.77E-01
		711.69	54.10	-1.29E-02		1.48E-01
+	TM-171	66.72	0.14	-3.97E-01	4.90E+01	4.90E+01
+	HF-172	81.75	4.52	-3.62E-01	4.44E-01	1.35E+00
		125.81	11.30	-2.63E-01		4.44E-01
+	LU-172	181.53	20.60	-4.43E-01	2.91E+00	4.51E+00
		810.06	16.63	-4.79E+00		8.03E+00
		912.12	15.25	3.15E+01		1.87E+01
		1093.66	62.50	-5.20E-01		2.91E+00
+	LU-173	100.72	5.24	-1.40E-01	3.52E-01	3.36E-01
		272.11	21.20	2.13E-01		3.52E-01
+	HF-175	343.40	84.00	6.81E-03	1.10E-01	1.10E-01
+	LU-176	88.34	13.30	1.39E-01	7.00E-02	5.05E-01

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
	LU-176	201.83	86.00	-9.11E-03	7.00E-02	7.77E-02
		306.78	94.00	2.06E-02		7.00E-02
+	TA-182	67.75	41.20	3.09E-02	1.90E-01	1.90E-01
		1121.30	34.90	5.37E-01		5.11E-01
		1189.05	16.23	-1.91E-02		7.31E-01
		1221.41	26.98	-1.23E-01		5.32E-01
		1231.02	11.44	5.95E-02		1.23E+00
+	IR-192	308.46	29.68	2.09E-02	1.82E-01	2.78E-01
		468.07	48.10	5.81E-03		1.82E-01
+	HG-203	279.19	77.30	7.54E-02	1.37E-01	1.37E-01
+	BI-207	569.67	97.72	-3.55E-03	8.47E-02	8.47E-02
		1063.62	74.90	-8.62E-03		1.12E-01
+	TL-208	583.14	* 30.22	7.54E-01	4.72E-02	4.11E-01
		860.37	4.48	6.28E-01		2.22E+00
		2614.66	* 35.85	7.15E-01		4.72E-02
+	BI-210M	262.00	45.00	2.00E-02	1.44E-01	1.44E-01
		300.00	23.00	-1.03E+00		3.43E-01
+	PB-210	46.50	* 4.25	1.59E+00	2.68E+00	2.68E+00
+	PB-211	404.84	2.90	-2.65E-01	2.51E+00	2.51E+00
		831.96	2.90	-5.74E-01		2.89E+00
+	BI-212	727.17	* 11.80	7.06E-01	9.92E-01	9.92E-01
		1620.62	2.75	8.37E-02		3.37E+00
+	PB-212	238.63	* 44.60	1.08E+00	2.68E-01	2.68E-01
		300.09	* 3.41	2.21E+00		3.85E+00
+	BI-214	609.31	* 46.30	1.31E+00	2.42E-01	2.42E-01
		1120.29	* 15.10	1.45E+00		9.21E-01
		1764.49	* 15.80	1.28E+00		7.60E-01
		2204.22	4.98	4.57E-01		2.22E+00
+	PB-214	295.21	* 19.13	1.43E+00	2.48E-01	6.68E-01
		351.92	* 37.19	1.34E+00		2.48E-01
+	RN-219	401.80	6.50	-6.04E-02	1.12E+00	1.12E+00
+	RA-223	323.87	3.88	-8.66E-01	1.59E+00	1.59E+00
+	RA-224	240.98	3.95	1.55E+01	3.21E+00	3.21E+00
+	RA-225	40.00	31.00	3.67E-01	1.19E+00	1.19E+00
+	RA-226	186.21	* 3.28	2.74E+00	2.72E+00	2.72E+00
+	TH-227	50.10	8.40	-1.57E-01	8.62E-01	8.62E-01
		236.90	11.50	1.39E+00		9.01E-01
		256.20	6.30	-4.29E-01		9.98E-01
+	AC-228	338.32	* 11.40	9.08E-01	5.07E-01	8.37E-01
		911.07	* 27.70	9.33E-01		5.07E-01
		969.11	* 16.60	9.15E-01		6.35E-01
+	TH-230	48.44	16.90	4.19E-01	5.03E-01	5.03E-01
		62.85	4.60	1.14E+00		1.59E+00
		67.57	0.37	2.91E+00		1.79E+01
+	PA-231	283.67	1.60	2.42E-02	3.14E+00	3.93E+00
		302.67	2.30	1.09E+00		3.14E+00
+	TH-231	25.64	14.70	1.55E+00	9.29E-01	3.20E+00
		84.21	6.40	-4.50E-02		9.29E-01

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

	Nuclide Name	Energy (keV)	Yield(%)	Activity (pCi/grams)	Nuclide MDA (pCi/grams)	Line MDA (pCi/grams)
+	PA-233	311.98	38.60	5.77E-02	3.51E-01	3.51E-01
+	PA-234	131.20	20.40	2.16E-02	2.52E-01	2.52E-01
		733.99	8.80	2.34E-01		8.85E-01
		946.00	12.00	-5.55E-01		6.68E-01
+	PA-234M	1001.03	0.92	-8.85E-01	1.07E+01	1.07E+01
+	TH-234	63.29	*	3.80	2.83E+00	2.83E+00
+	U-235	143.76	10.50	-2.19E-01	4.82E-01	4.82E-01
		163.35	4.70	-3.37E-02		1.02E+00
		205.31	4.70	2.78E-01		1.49E+00
+	NP-237	86.50	12.60	3.25E-01	5.24E-01	5.24E-01
+	NP-239	106.10	22.70	1.65E+02	7.60E+02	7.60E+02
		228.18	10.70	-3.86E+02		2.14E+03
		277.60	14.10	9.78E+02		1.80E+03
+	AM-241	59.54	35.90	-1.87E-01	1.82E-01	1.82E-01
+	AM-243	74.67	*	66.00	1.84E-01	1.84E-01
+	CM-243	209.75	3.29	1.69E+00	4.98E-01	2.17E+00
		228.14	10.60	-1.07E-01		5.92E-01
		277.60	14.00	2.70E-01		4.98E-01

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = MDA value not calculated

@ = Half-life too short to be able to perform the decay correction

? = CAUTION: MDA value is inconsistent with Currie MDA at 95% confidence level

NUCLIDE MDA REPORT

Nuclide Library Used : \\OR-GAMMA1\ApexRoot\Countroom\Library\TMA2.NLB

	Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
+	BE-7	477.59	*	10.42	1.46E+00	1.95E+00	7.01E-01
	NA-22	1274.54	99.94	1.24E-01	1.24E-01	4.35E-03	5.66E-02
	NA-24	1368.53	99.99	2.41E+12	4.62E+11	-2.45E+11	1.06E+12
		2754.09	99.86	4.62E+11		0.00E+00	0.00E+00

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Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
AL-26	1808.65	99.76	7.93E-02	7.93E-02	1.94E-02	3.29E-02
K-40	1460.81	10.67	4.63E-01	4.63E-01	1.43E+01	1.78E-01
AR-41	1293.64	99.16	1.00E+26	1.00E+26	1.00E+26	1.00E+20
TI-44	67.88	94.40	7.00E-02	7.00E-02	1.14E-02	3.41E-02
	78.34	96.00	8.90E-02		2.04E-01	4.37E-02
SC-46	889.25	99.98	1.13E-01	1.13E-01	-1.75E-02	5.17E-02
	1120.51	99.99	1.96E-01		2.52E-01	9.23E-02
V-48	983.52	99.98	2.82E-01	2.82E-01	-3.58E-02	1.27E-01
	1312.10	97.50	3.61E-01		6.05E-02	1.62E-01
CR-51	320.08	9.83	1.35E+00	1.35E+00	4.60E-01	6.43E-01
MN-54	834.83	99.97	8.84E-02	8.84E-02	-2.98E-02	4.03E-02
CO-56	846.75	99.96	1.03E-01	1.03E-01	3.76E-02	4.70E-02
	1037.75	14.03	8.40E-01		2.35E-01	3.80E-01
	1238.25	67.00	2.74E-01		1.38E-01	1.27E-01
	1771.40	15.51	5.71E-01		-1.39E-01	2.31E-01
	2598.48	16.90	4.38E-01		-4.71E-02	1.55E-01
CO-57	122.06	85.51	6.08E-02	6.08E-02	5.71E-03	2.93E-02
	136.48	10.60	4.84E-01		-2.95E-01	2.33E-01
CO-58	810.76	99.40	9.88E-02	9.88E-02	-5.51E-02	4.47E-02
FE-59	1099.22	56.50	2.60E-01	2.60E-01	-1.97E-02	1.18E-01
	1291.56	43.20	3.94E-01		6.20E-02	1.78E-01
CO-60	1173.22	100.00	1.12E-01	8.75E-02	5.77E-02	5.10E-02
	1332.45	100.00	8.75E-02		-6.85E-02	3.83E-02
ZN-65	1115.52	50.75	2.37E-01	2.37E-01	2.83E-02	1.09E-01
GA-67	93.31	35.70	6.66E+01	6.66E+01	8.18E+01	3.25E+01
	208.95	2.24	1.23E+03		1.43E+03	5.97E+02
	300.22	16.00	1.85E+02		-5.56E+02	8.88E+01
SE-75	121.11	16.70	3.48E-01	9.56E-02	1.66E-01	1.68E-01
	136.00	59.20	9.56E-02		-3.60E-02	4.61E-02
	264.65	59.80	1.25E-01		2.13E-02	5.97E-02
	279.53	25.20	3.25E-01		2.66E-01	1.56E-01
	400.65	11.40	7.32E-01		-3.43E-01	3.46E-01
RB-82	776.52	13.00	1.37E+00	1.37E+00	-3.79E-02	6.29E-01
RB-83	520.41	46.00	1.72E-01	1.72E-01	-5.77E-02	7.95E-02
	529.64	30.30	2.95E-01		8.83E-02	1.38E-01
	552.65	16.40	5.22E-01		-1.84E-01	2.42E-01
KR-85	513.99	0.43	2.31E+01	2.31E+01	2.35E+01	1.10E+01
SR-85	513.99	99.27	1.35E-01	1.35E-01	1.38E-01	6.45E-02
Y-88	898.02	93.40	1.16E-01	1.14E-01	-2.91E-02	5.32E-02
	1836.01	99.38	1.14E-01		3.04E-02	4.90E-02
NB-93M	16.57	9.43	7.85E+01	7.85E+01	-3.13E+01	3.81E+01
NB-94	702.63	100.00	8.59E-02	8.59E-02	1.03E-02	3.98E-02
	871.10	100.00	9.13E-02		1.18E-02	4.19E-02
NB-95	765.79	99.81	1.94E-01	1.94E-01	1.63E-01	9.11E-02
NB-95M	235.69	25.00	8.74E+01	8.74E+01	1.35E+02	4.26E+01
ZR-95	724.13	43.70	2.63E-01	2.08E-01	1.30E-02	1.22E-01
	756.72	55.30	2.08E-01		7.47E-02	9.60E-02
MO-99	181.06	6.20	9.77E+02	6.48E+02	1.92E+01	4.70E+02
	739.58	12.80	6.48E+02		-3.49E+02	2.95E+02
	778.00	4.50	2.09E+03		3.11E+02	9.59E+02
RU-103	497.08	89.00	1.09E-01	1.09E-01	-1.15E-01	5.05E-02
RU-106	621.84	9.80	8.37E-01	8.37E-01	1.06E-01	3.88E-01
AG-108M	433.93	89.90	8.11E-02	8.11E-02	2.03E-03	3.83E-02

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
AG-108M	614.37	90.40	1.02E-01	8.11E-02	-1.02E-02	4.79E-02
	722.95	90.50	8.59E-02		1.16E-02	3.94E-02
+ CD-109	88.03 *	3.72	2.10E+00	2.10E+00	1.33E+00	1.03E+00
AG-110M	657.75	93.14	9.00E-02	9.00E-02	-8.26E-02	4.16E-02
	677.61	10.53	7.94E-01		-1.63E-01	3.66E-01
	706.67	16.46	5.32E-01		-4.31E-02	2.45E-01
	763.93	21.98	4.50E-01		1.73E-02	2.08E-01
	884.67	71.63	1.40E-01		4.81E-02	6.40E-02
	1384.27	23.94	4.42E-01		-1.10E-01	1.96E-01
CD-113M	263.70	0.02	2.77E+02	2.77E+02	1.82E+01	1.33E+02
SN-113	255.12	1.93	3.89E+00	1.38E-01	-1.20E+00	1.87E+00
	391.69	64.90	1.38E-01		3.80E-02	6.58E-02
TE-123M	159.00	84.10	7.05E-02	7.05E-02	-1.11E-02	3.39E-02
SB-124	602.71	97.87	1.16E-01	1.16E-01	-1.94E-02	5.42E-02
	645.85	7.26	1.52E+00		-2.00E-02	7.02E-01
	722.78	11.10	9.65E-01		1.31E-01	4.43E-01
	1691.02	49.00	2.33E-01		8.02E-02	9.84E-02
I-125	35.49	6.49	2.77E+00	2.77E+00	-3.09E-02	1.34E+00
SB-125	176.33	6.89	7.74E-01	2.31E-01	-1.63E-01	3.72E-01
	427.89	29.33	2.31E-01		-8.85E-03	1.08E-01
	463.38	10.35	7.75E-01		3.14E-01	3.66E-01
	600.56	17.80	4.67E-01		-3.87E-02	2.18E-01
	635.90	11.32	6.97E-01		5.28E-02	3.23E-01
SB-126	414.70	83.30	4.17E-01	3.73E-01	1.59E-01	1.97E-01
	666.33	99.60	4.04E-01		-9.07E-02	1.88E-01
	695.00	99.60	3.73E-01		-6.07E-02	1.72E-01
	720.50	53.80	7.13E-01		-2.14E-02	3.29E-01
+ SN-126	87.57 *	37.00	2.02E-01	2.02E-01	1.28E-01	9.91E-02
SB-127	473.00	25.00	4.60E+01	3.56E+01	-5.37E+00	2.17E+01
	685.20	35.70	3.56E+01		1.43E+01	1.65E+01
	783.80	14.70	8.94E+01		-3.56E-01	4.12E+01
I-129	29.78	57.00	4.21E-01	4.21E-01	1.81E-01	2.04E-01
	33.60	13.20	1.21E+00		4.13E-01	5.84E-01
	39.58	7.52	1.36E+00		4.21E-01	6.57E-01
I-131	284.30	6.05	1.15E+01	9.31E-01	7.08E-02	5.50E+00
	364.48	81.20	9.31E-01		2.84E-01	4.41E-01
	636.97	7.26	1.21E+01		6.23E+00	5.62E+00
	722.89	1.80	4.77E+01		6.46E+00	2.19E+01
TE-132	49.72	13.10	2.10E+02	2.68E+01	-3.82E+01	1.02E+02
	228.16	88.00	2.68E+01		-4.83E+00	1.29E+01
BA-133	81.00	33.00	1.84E-01	1.71E-01	-7.92E-01	8.96E-02
	302.84	17.80	4.08E-01		1.41E-01	1.96E-01
	356.01	60.00	1.71E-01		-5.84E-04	8.28E-02
I-133	529.87	86.30	3.98E+08	3.98E+08	1.19E+08	1.85E+08
XE-133	81.00	38.00	6.33E+00	6.33E+00	-2.73E+01	3.08E+00
CS-134	563.23	8.38	9.44E-01	9.32E-02	-2.92E-01	4.40E-01
	569.32	15.43	5.63E-01		1.21E-01	2.64E-01
	604.70	97.60	9.32E-02		-1.70E-02	4.37E-02
	795.84	85.40	1.11E-01		4.16E-02	5.13E-02
	801.93	8.73	9.88E-01		1.30E-01	4.53E-01
CS-135	268.20	16.00	4.35E-01	4.35E-01	-1.06E-02	2.09E-01
@ I-135	1131.51	22.50	1.00E+26	1.00E+26	1.00E+26	1.00E+20
@	1260.41	28.60	1.00E+26		1.00E+26	1.00E+20

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
@ I-135	1678.03	9.54	1.00E+26	1.00E+26	1.00E+26	1.00E+20
CS-136	153.22	7.46	3.05E+00	3.60E-01	8.51E-01	1.47E+00
	163.89	4.61	4.53E+00		-1.49E-01	2.17E+00
	176.55	13.56	1.68E+00		-2.66E-01	8.10E-01
	273.65	12.66	2.39E+00		-9.82E-01	1.15E+00
	340.57	48.50	7.57E-01		8.33E-01	3.64E-01
	818.50	99.70	3.60E-01		-4.59E-02	1.64E-01
	1048.07	79.60	5.63E-01		1.13E-01	2.57E-01
	1235.34	19.70	3.10E+00		6.21E-01	1.44E+00
CS-137	661.65	85.12	1.04E-01	1.04E-01	1.25E-02	4.87E-02
LA-138	788.74	34.00	2.35E-01	1.50E-01	-7.64E-02	1.08E-01
	1435.80	66.00	1.50E-01		-3.18E-03	6.62E-02
CE-139	165.85	80.35	7.20E-02	7.20E-02	6.44E-03	3.46E-02
BA-140	162.64	6.70	3.22E+00	1.25E+00	-2.44E-01	1.55E+00
	304.84	4.50	6.57E+00		-1.49E-01	3.13E+00
	423.70	3.20	8.99E+00		-3.91E+00	4.21E+00
	437.55	2.00	1.62E+01		-2.06E+00	7.64E+00
	537.32	25.00	1.25E+00		-3.15E-01	5.81E-01
LA-140	328.77	20.50	1.45E+00	4.60E-01	-3.44E-02	6.87E-01
	487.03	45.50	6.81E-01		-7.51E-02	3.18E-01
	815.85	23.50	1.59E+00		1.01E-01	7.26E-01
	1596.49	95.49	4.60E-01		-2.16E-02	2.01E-01
CE-141	145.46	48.40	2.00E-01	2.00E-01	8.74E-02	9.67E-02
CE-143	57.36	11.80	7.21E+05	2.93E+05	5.50E+04	3.50E+05
	293.26	42.00	2.93E+05		5.85E+05	1.42E+05
	664.55	5.20	2.26E+06		9.34E+05	1.06E+06
CE-144	133.54	10.80	4.73E-01	4.73E-01	-1.61E-01	2.28E-01
PM-144	476.78	42.00	2.54E-01	8.00E-02	2.27E-01	1.21E-01
	618.01	98.60	8.00E-02		-2.02E-02	3.70E-02
	696.49	99.49	8.40E-02		-1.48E-02	3.87E-02
PM-145	36.85	21.70	5.56E-01	3.02E-01	1.07E-01	2.69E-01
	37.36	39.70	3.02E-01		9.10E-02	1.46E-01
	42.30	15.10	6.08E-01		-1.65E-01	2.94E-01
	72.40	2.31	3.19E+00		-6.30E+00	1.56E+00
PM-146	453.90	39.94	1.87E-01	1.87E-01	-2.09E-02	8.80E-02
	735.90	14.01	5.81E-01		3.48E-01	2.67E-01
	747.13	13.10	7.32E-01		4.50E-01	3.41E-01
ND-147	91.11	28.90	1.31E+00	1.31E+00	2.27E-01	6.38E-01
	531.02	13.10	3.11E+00		3.97E-01	1.44E+00
PM-149	285.90	3.10	1.22E+04	1.22E+04	2.48E+02	5.83E+03
EU-152	121.78	20.50	2.37E-01	2.37E-01	2.23E-02	1.14E-01
	244.69	5.40	1.45E+00		-9.22E-02	7.02E-01
	344.27	19.13	3.51E-01		1.76E-02	1.67E-01
	778.89	9.20	9.24E-01		2.48E-01	4.25E-01
	964.01	10.40	9.81E-01		3.34E-01	4.51E-01
	1085.78	7.22	9.65E-01		-1.63E-01	4.19E-01
	1112.02	9.60	1.12E+00		1.09E-01	5.12E-01
	1407.95	14.94	6.39E-01		-3.08E-01	2.82E-01
GD-153	97.43	31.30	1.71E-01	1.71E-01	-1.44E-01	8.28E-02
	103.18	22.20	2.28E-01		-3.16E-02	1.10E-01
EU-154	123.07	40.50	1.20E-01	1.20E-01	-1.20E-03	5.80E-02
	723.30	19.70	3.97E-01		5.38E-02	1.82E-01
	873.19	11.50	7.55E-01		2.44E-02	3.45E-01

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
EU-154	996.32	10.30	9.07E-01	1.20E-01	-3.30E-01	4.13E-01
	1004.76	17.90	5.26E-01		3.42E-02	2.39E-01
	1274.45	35.50	3.44E-01		1.21E-02	1.57E-01
EU-155	86.50	30.90	2.16E-01	2.16E-01	1.34E-01	1.05E-01
	105.30	20.70	2.29E-01		-4.39E-03	1.10E-01
EU-156	811.77	10.40	2.60E+00	2.60E+00	-5.72E-01	1.18E+00
	1153.47	7.20	4.99E+00		6.75E-01	2.26E+00
	1230.71	8.90	4.67E+00		-2.19E+00	2.13E+00
HO-166M	184.41	72.60	9.45E-02	9.45E-02	1.65E-01	4.58E-02
	280.45	29.60	2.29E-01		1.27E-01	1.09E-01
	410.94	11.10	6.77E-01		4.56E-02	3.21E-01
	711.69	54.10	1.48E-01		-1.29E-02	6.81E-02
TM-171	66.72	0.14	4.90E+01	4.90E+01	-3.97E-01	2.39E+01
HF-172	81.75	4.52	1.35E+00	4.44E-01	-3.62E-01	6.57E-01
	125.81	11.30	4.44E-01		-2.63E-01	2.14E-01
LU-172	181.53	20.60	4.51E+00	2.91E+00	-4.43E-01	2.17E+00
	810.06	16.63	8.03E+00		-4.79E+00	3.63E+00
	912.12	15.25	1.87E+01		3.15E+01	8.88E+00
	1093.66	62.50	2.91E+00		-5.20E-01	1.33E+00
LU-173	100.72	5.24	9.36E-01	3.52E-01	-1.40E-01	4.52E-01
	272.11	21.20	3.52E-01		2.13E-01	1.69E-01
HF-175	343.40	84.00	1.10E-01	1.10E-01	6.81E-03	5.22E-02
LU-176	88.34	13.30	5.05E-01	7.00E-02	1.39E-01	2.46E-01
	201.83	86.00	7.77E-02		-9.11E-03	3.76E-02
	306.78	94.00	7.00E-02		2.06E-02	3.34E-02
TA-182	67.75	41.20	1.90E-01	1.90E-01	3.09E-02	9.26E-02
	1121.30	34.90	5.11E-01		5.37E-01	2.40E-01
	1189.05	16.23	7.31E-01		-1.91E-02	3.30E-01
	1221.41	26.98	5.32E-01		-1.23E-01	2.44E-01
	1231.02	11.44	1.23E+00		5.95E-02	5.65E-01
IR-192	308.46	29.68	2.78E-01	1.82E-01	2.09E-02	1.32E-01
	468.07	48.10	1.82E-01		5.81E-03	8.51E-02
HG-203	279.19	77.30	1.37E-01	1.37E-01	7.54E-02	6.57E-02
BI-207	569.67	97.72	8.47E-02	8.47E-02	-3.55E-03	3.97E-02
	1063.62	74.90	1.12E-01		-8.62E-03	5.01E-02
+ TL-208	583.14	* 30.22	4.11E-01	4.72E-02	7.54E-01	1.97E-01
	860.37	* 4.48	2.22E+00		6.28E-01	1.03E+00
	2614.66	* 35.85	4.72E-02		7.15E-01	0.00E+00
BI-210M	262.00	45.00	1.44E-01	1.44E-01	2.00E-02	6.91E-02
	300.00	23.00	3.43E-01		-1.03E+00	1.65E-01
+ PB-210	46.50	* 4.25	2.68E+00	2.68E+00	1.59E+00	1.31E+00
	404.84	2.90	2.51E+00	2.51E+00	-2.65E-01	1.19E+00
	831.96	2.90	2.89E+00		-5.74E-01	1.32E+00
+ BI-212	727.17	* 11.80	9.92E-01	9.92E-01	7.06E-01	4.69E-01
	1620.62	2.75	3.37E+00		8.37E-02	1.46E+00
+ PB-212	238.63	* 44.60	2.68E-01	2.68E-01	1.08E+00	1.31E-01
	300.09	* 3.41	3.85E+00		2.21E+00	1.88E+00
+ BI-214	609.31	* 46.30	2.42E-01	2.42E-01	1.31E+00	1.15E-01
	1120.29	* 15.10	9.21E-01		1.45E+00	4.30E-01
	1764.49	* 15.80	7.60E-01		1.28E+00	3.38E-01
	2204.22	4.98	2.22E+00		4.57E-01	9.58E-01
+ PB-214	295.21	* 19.19	6.68E-01	2.48E-01	1.43E+00	3.26E-01
	351.92	* 37.19	2.48E-01		1.34E+00	1.19E-01

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

	Nuclide Name	Energy (keV)	Yield(%)	Line MDA (pCi/grams)	Nuclide MDA (pCi/grams)	Activity (pCi/grams)	Dec. Level (pCi/grams)
	RN-219	401.80	6.50	1.12E+00	1.12E+00	-6.04E-02	5.30E-01
	RA-223	323.87	3.88	1.59E+00	1.59E+00	-8.66E-01	7.52E-01
	RA-224	240.98	3.95	3.21E+00	3.21E+00	1.55E+01	1.57E+00
	RA-225	40.00	31.00	1.19E+00	1.19E+00	3.67E-01	5.74E-01
+	RA-226	186.21 *	3.28	2.72E+00	2.72E+00	2.74E+00	1.33E+00
	TH-227	50.10	8.40	8.62E-01	8.62E-01	-1.57E-01	4.18E-01
		236.00	11.50	9.01E-01		1.39E+00	4.40E-01
		256.20	6.30	9.98E-01		-4.29E-01	4.78E-01
+	AC-228	338.32 *	11.40	8.37E-01	5.07E-01	9.08E-01	4.04E-01
		911.07 *	27.70	5.07E-01		9.33E-01	2.40E-01
		969.11 *	16.60	6.35E-01		9.15E-01	2.92E-01
	TH-230	48.44	16.90	5.03E-01	5.03E-01	4.19E-01	2.44E-01
		62.85	4.60	1.59E+00		1.14E+00	7.74E-01
		67.67	0.37	1.79E+01		2.91E+00	8.72E+00
	PA-231	283.67	1.60	3.93E+00	3.14E+00	2.42E-02	1.88E+00
		302.67	2.30	3.14E+00		1.09E+00	1.50E+00
	TH-231	25.64	14.70	3.20E+00	9.29E-01	1.55E+00	1.55E+00
		84.21	6.40	9.29E-01		-4.50E-02	4.52E-01
	PA-233	311.98	38.60	3.51E-01	3.51E-01	5.77E-02	1.67E-01
	PA-234	131.20	20.40	2.52E-01	2.52E-01	2.16E-02	1.22E-01
		733.99	8.80	8.85E-01		2.34E-01	4.06E-01
		946.00	12.00	6.68E-01		-5.55E-01	3.00E-01
	PA-234M	1001.03	0.92	1.07E+01	1.07E+01	-8.85E-01	4.87E+00
+	TH-234	63.29 *	3.80	2.83E+00	2.83E+00	2.01E+00	1.39E+00
	U-235	143.76	10.50	4.82E-01	4.82E-01	-2.19E-01	2.33E-01
		163.35	4.70	1.02E+00		-3.37E-02	4.90E-01
		205.31	4.70	1.49E+00		2.78E-01	7.20E-01
	NP-237	86.55	12.60	5.24E-01	5.24E-01	3.25E-01	2.56E-01
	NP-239	106.10	22.70	7.60E+02	7.60E+02	1.65E+02	3.67E+02
		228.18	10.70	2.14E+03		-3.86E+02	1.03E+03
		277.60	14.10	1.80E+03		9.78E+02	8.65E+02
	AM-241	59.54	35.90	1.82E-01	1.82E-01	-1.87E-01	8.82E-02
+	AM-243	74.67 *	66.00	1.84E-01	1.84E-01	2.24E-01	9.05E-02
	CM-243	209.75	3.29	2.17E+00	4.98E-01	1.69E+00	1.05E+00
		228.14	10.60	5.92E-01		-1.07E-01	2.85E-01
		277.60	14.00	4.98E-01		2.70E-01	2.39E-01

+ = Nuclide identified during the nuclide identification

* = Energy line found in the spectrum

> = MDA value not calculated

@ = Half-life too short to be able to perform the decay correction

No Action Level results available for reporting purposes.

Analysis Report for 1603102-06

SEDIMENT 2016-03-16B DUP

DATA REVIEW COMMENTS REPORT

Creation Date**Comment****User**

No Data Review Comments Entered.

***** S P E C T R A L D A T A R E P O R T *****

Sample Title: SEDIMENT 2016-03-16B DUP

Elapsed Live time: 3600

Elapsed Real Time: 3611

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1:	0	0	0	0	0	0	0	0
9:	4	134	159	124	85	92	77	88
17:	71	66	48	69	50	77	74	72
25:	61	59	59	62	42	54	55	67
33:	50	40	41	81	47	46	52	57
41:	58	61	52	68	54	65	151	72
49:	63	64	63	67	76	64	69	92
57:	71	64	75	93	82	84	120	159
65:	106	95	93	92	112	106	100	103
73:	103	131	224	246	249	384	120	87
81:	109	89	70	104	118	85	113	167
89:	98	108	117	82	162	143	81	71
97:	64	61	57	67	56	58	50	56
105:	61	60	52	54	57	48	53	60
113:	61	68	46	62	44	55	58	59
121:	50	63	58	43	57	45	58	68
129:	73	59	53	50	55	55	38	47
137:	62	44	50	63	55	42	47	61
145:	63	44	65	51	57	49	45	46
153:	51	59	57	48	38	54	50	42
161:	43	40	49	30	34	45	51	54
169:	35	43	27	39	55	48	35	46
177:	44	41	50	40	42	33	55	33
185:	43	115	107	42	40	42	40	48
193:	37	34	37	47	39	57	47	47
201:	37	50	29	43	40	52	45	55
209:	46	48	46	49	28	29	29	32
217:	42	33	36	31	23	31	30	32
225:	32	22	33	24	32	37	32	34
233:	32	27	39	25	34	81	330	163
241:	47	96	79	34	23	21	21	25
249:	29	25	31	32	23	29	21	27
257:	22	28	27	32	23	23	26	34
265:	17	29	20	22	30	37	48	23
273:	21	26	26	18	34	29	33	26
281:	25	26	16	22	13	20	27	22
289:	18	20	19	21	15	31	88	155
297:	45	20	31	31	46	22	22	22
305:	23	12	19	22	20	25	18	16
313:	18	23	21	17	18	21	25	16
321:	13	23	18	14	15	11	19	16
329:	24	17	21	17	25	17	25	15
337:	18	50	55	29	19	18	13	17
345:	20	17	17	18	18	14	48	203
353:	167	32	23	10	17	14	13	17
361:	11	20	15	15	14	18	12	20

369: 15 13 19 15 11 18 19 14

Sample Title: SEDIMENT 2016-03-16B DUP

Channel	-----	-----	-----	-----	-----	-----	-----	-----
377:	13	16	11	9	13	12	12	17
385:	21	21	13	24	26	19	18	15
393:	14	21	12	15	13	20	15	15
401:	14	11	15	14	25	17	14	12
409:	15	20	13	20	17	15	12	19
417:	12	9	5	14	10	21	8	9
425:	8	8	10	14	17	12	11	15
433:	14	11	11	19	14	13	12	10
441:	11	13	16	7	8	11	9	13
449:	13	12	5	15	19	12	13	16
457:	10	11	18	10	15	13	24	18
465:	9	10	7	11	11	10	12	14
473:	10	13	15	15	23	58	25	10
481:	16	19	6	7	13	9	6	12
489:	16	4	8	9	14	10	8	4
497:	7	8	5	6	17	8	16	12
505:	14	12	10	11	11	29	54	30
513:	14	16	9	7	5	8	9	5
521:	11	5	7	11	8	9	8	10
529:	11	9	11	9	5	5	8	7
537:	11	12	10	4	13	10	12	10
545:	10	9	10	15	6	7	5	11
553:	7	5	7	11	11	6	10	6
561:	12	8	9	6	15	10	16	12
569:	5	12	10	14	6	13	7	10
577:	8	6	10	13	6	18	73	60
585:	12	9	9	15	10	8	3	7
593:	11	11	5	7	9	10	10	10
601:	12	12	2	10	12	9	9	24
609:	110	128	33	12	12	7	5	8
617:	5	6	7	11	10	8	8	5
625:	7	4	13	9	7	5	10	3
633:	4	5	2	11	7	10	14	7
641:	9	5	7	12	13	3	5	10
649:	5	6	11	5	11	7	7	8
657:	5	8	6	9	7	22	6	5
665:	11	10	11	6	10	6	5	13
673:	7	6	9	8	8	5	5	4
681:	8	8	3	3	3	10	4	12
689:	4	7	5	7	5	2	10	10
697:	5	7	8	9	9	5	7	7
705:	8	10	9	5	5	4	8	8
713:	6	6	9	6	8	4	5	7
721:	7	6	9	2	8	3	16	24
729:	10	11	4	4	4	9	6	9
737:	5	6	5	4	2	5	9	6
745:	9	11	13	5	9	8	2	6
753:	5	5	7	9	6	7	4	9
761:	8	1	9	6	4	10	16	18
769:	19	7	10	2	7	6	4	4
777:	8	6	8	7	6	5	4	6
785:	9	9	7	4	4	2	5	7
793:	5	8	14	11	6	6	1	8

801: 2 7 6 10 7 8 8 4

Sample Title: SEDIMENT 2016-03-16B DUP

Channel	-----	-----	-----	-----	-----	-----	-----	-----
809:	3	4	6	2	4	8	5	6
817:	4	4	7	5	7	5	7	7
825:	4	6	7	5	7	6	7	5
833:	3	1	7	4	9	8	3	9
841:	5	3	3	8	4	5	4	4
849:	4	5	3	4	2	7	7	7
857:	5	5	3	13	11	8	7	3
865:	7	5	4	6	6	9	7	2
873:	3	9	2	5	2	7	9	4
881:	7	9	4	6	4	7	5	1
889:	5	4	6	11	9	6	5	5
897:	5	4	4	10	6	7	5	7
905:	7	6	8	5	4	27	45	34
913:	9	4	4	5	3	7	1	3
921:	8	3	3	0	4	4	4	4
929:	3	3	6	4	6	9	6	3
937:	2	3	6	4	4	8	7	6
945:	4	1	5	4	0	8	7	3
953:	4	10	9	6	5	3	6	4
961:	7	5	4	14	5	5	4	17
969:	30	13	5	3	3	3	4	5
977:	7	5	2	7	4	8	1	1
985:	3	4	3	7	2	6	7	4
993:	5	7	4	5	5	4	4	6
1001:	8	3	6	7	7	6	1	4
1009:	4	2	7	4	2	3	6	5
1017:	3	4	2	3	5	6	2	2
1025:	3	6	4	3	3	4	5	2
1033:	2	4	3	6	5	4	3	6
1041:	4	6	1	7	5	8	12	4
1049:	3	5	2	5	5	5	6	6
1057:	6	2	5	2	1	3	1	4
1065:	6	7	4	4	3	4	4	4
1073:	2	1	5	4	4	4	4	3
1081:	6	5	2	1	2	1	2	4
1089:	3	5	7	7	6	5	3	2
1097:	8	6	3	2	5	4	4	6
1105:	2	4	6	3	3	4	6	2
1113:	8	9	6	3	8	5	9	25
1121:	22	7	8	2	4	4	0	5
1129:	5	5	3	5	6	3	3	1
1137:	2	7	8	4	3	3	8	1
1145:	4	5	2	7	3	2	9	0
1153:	6	4	8	2	2	4	6	3
1161:	4	4	4	9	2	4	1	3
1169:	3	3	2	9	8	4	4	7
1177:	3	3	4	3	5	6	6	4
1185:	3	3	4	2	4	4	6	6
1193:	3	7	3	4	5	4	2	8
1201:	4	0	6	4	4	7	9	4
1209:	9	7	4	5	6	7	4	5
1217:	4	10	8	11	2	4	3	4
1225:	10	8	4	2	9	3	4	5

1233: 11 6 6 4 11 14 12 9

Sample Title: SEDIMENT 2016-03-16B DUP

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1241:	3	3	4	7	4	6	5	4
1249:	4	5	3	3	4	2	7	3
1257:	2	2	2	9	8	1	6	3
1265:	4	5	5	4	5	6	7	1
1273:	3	5	3	5	4	4	2	6
1281:	12	3	3	3	3	4	3	4
1289:	6	2	1	5	1	5	4	3
1297:	2	2	1	5	4	4	1	3
1305:	1	2	3	3	5	1	2	4
1313:	4	2	3	3	3	2	1	1
1321:	4	1	0	3	3	4	3	1
1329:	2	3	1	3	4	2	0	1
1337:	4	4	1	1	2	3	3	1
1345:	2	3	0	3	4	1	3	2
1353:	2	3	4	1	2	1	3	2
1361:	0	3	6	2	1	5	2	0
1369:	1	2	3	2	0	1	1	4
1377:	0	3	3	4	1	2	4	4
1385:	1	1	3	1	3	3	2	0
1393:	1	4	1	1	2	2	1	6
1401:	5	2	1	2	1	3	5	1
1409:	3	3	1	0	5	4	3	0
1417:	4	0	1	1	1	5	1	0
1425:	2	0	1	0	2	1	5	3
1433:	2	3	3	0	1	2	1	1
1441:	2	3	1	0	4	1	0	1
1449:	1	2	1	2	1	3	0	0
1457:	1	7	48	128	125	49	4	0
1465:	1	1	1	1	3	0	2	5
1473:	1	0	1	2	2	1	1	0
1481:	1	1	2	2	0	0	0	1
1489:	2	1	1	0	2	2	3	3
1497:	2	1	3	5	1	1	0	1
1505:	2	1	1	4	4	3	4	2
1513:	2	6	1	0	0	1	1	3
1521:	1	2	2	2	1	1	4	0
1529:	0	2	4	3	1	0	1	2
1537:	1	3	2	2	1	2	0	1
1545:	2	2	0	1	1	0	0	1
1553:	1	0	1	2	1	2	0	1
1561:	0	1	1	0	2	0	0	3
1569:	0	1	0	0	2	1	2	0
1577:	0	1	2	0	1	1	2	3
1585:	1	2	4	6	1	3	4	1
1593:	7	1	4	1	0	2	0	0
1601:	1	1	0	2	0	0	1	2
1609:	0	0	0	2	1	0	3	5
1617:	1	1	3	1	1	1	0	1
1625:	0	3	1	2	3	5	1	2
1633:	0	1	0	0	2	1	0	0
1641:	0	1	2	0	1	1	0	0
1649:	0	1	1	2	0	0	0	2
1657:	2	0	4	3	4	1	1	0

1665:	2	2	2	1	1	0	0	0
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Sample Title: SEDIMENT 2016-03-16B DUP

Channel	-----	-----	-----	-----	-----	-----	-----	-----
1673:	0	0	0	1	1	0	0	0
1681:	2	0	1	0	3	0	1	0
1689:	3	0	2	0	2	2	0	0
1697:	0	0	2	1	1	2	1	1
1705:	0	2	2	3	0	0	1	0
1713:	1	0	1	1	0	1	1	2
1721:	3	0	0	3	1	1	0	2
1729:	1	5	4	1	0	0	0	0
1737:	0	2	1	0	1	2	1	1
1745:	1	0	1	0	1	0	1	0
1753:	0	1	0	1	1	1	1	1
1761:	0	6	11	23	8	1	1	2
1769:	1	0	0	0	2	0	0	2
1777:	0	0	1	2	0	0	0	0
1785:	1	0	0	0	1	0	1	1
1793:	1	1	2	0	2	0	0	0
1801:	1	1	0	0	1	2	2	1
1809:	1	0	1	0	1	0	0	1
1817:	0	0	0	0	0	0	1	0
1825:	1	0	1	0	1	0	0	2
1833:	2	0	1	0	1	4	2	1
1841:	2	1	0	2	0	2	3	2
1849:	1	0	0	1	1	0	0	0
1857:	1	1	4	0	1	0	0	1
1865:	1	1	1	0	0	0	0	2
1873:	1	3	1	0	0	0	0	0
1881:	0	2	1	0	1	1	1	1
1889:	0	1	3	1	0	1	0	0
1897:	0	2	0	1	1	0	0	2
1905:	1	0	1	2	0	0	0	3
1913:	2	1	0	0	1	1	0	1
1921:	0	0	1	0	0	1	2	0
1929:	2	1	1	0	0	0	0	1
1937:	0	2	0	1	1	0	1	0
1945:	1	1	1	0	0	2	0	0
1953:	1	0	1	3	1	0	0	1
1961:	1	0	2	0	0	0	1	0
1969:	0	0	1	2	3	1	0	0
1977:	0	0	0	0	1	0	0	0
1985:	1	1	1	1	2	0	0	1
1993:	0	0	1	1	0	0	0	1
2001:	0	1	0	0	1	0	2	1
2009:	0	2	2	1	2	1	1	2
2017:	0	0	0	1	0	0	0	0
2025:	1	0	0	0	0	0	0	0
2033:	0	0	2	2	0	0	0	0
2041:	0	0	0	0	0	1	0	2
2049:	1	2	0	4	1	0	1	0
2057:	1	0	1	0	0	1	2	1
2065:	1	0	0	0	0	1	1	0
2073:	1	0	1	0	1	1	1	0
2081:	0	1	0	1	1	0	0	0
2089:	0	2	0	0	1	0	0	0

2097: 1 1 0 0 1 2 7 1

Sample Title: SEDIMENT 2016-03-16B DUP

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2105:	2	1	0	1	0	1	0	0
2113:	0	1	1	0	1	1	3	0
2121:	0	0	0	0	0	1	0	0
2129:	1	1	0	1	1	0	0	0
2137:	0	0	0	1	0	0	1	0
2145:	0	0	1	0	1	0	0	0
2153:	0	2	1	0	0	0	0	0
2161:	1	1	0	1	0	0	0	1
2169:	2	0	2	0	0	0	0	0
2177:	0	0	2	0	2	0	1	1
2185:	0	0	0	3	0	2	0	3
2193:	0	0	2	1	1	1	1	0
2201:	0	5	3	2	0	1	0	2
2209:	1	1	1	1	1	2	2	0
2217:	0	0	2	1	0	0	1	0
2225:	1	0	0	0	0	0	0	1
2233:	0	0	1	1	0	0	0	2
2241:	0	1	0	2	0	1	0	2
2249:	0	1	2	0	0	0	1	0
2257:	1	2	2	0	1	1	0	0
2265:	1	0	0	0	1	3	0	1
2273:	1	2	2	1	0	0	3	1
2281:	1	0	0	1	2	1	0	1
2289:	1	0	0	0	2	1	2	1
2297:	0	0	0	1	1	1	2	1
2305:	0	1	1	0	0	0	0	1
2313:	0	1	0	0	0	0	0	0
2321:	1	1	0	2	1	1	0	1
2329:	1	0	1	2	1	1	1	0
2337:	0	0	1	0	0	1	0	0
2345:	1	1	0	0	1	1	0	1
2353:	1	1	0	2	2	0	2	0
2361:	0	2	0	1	0	0	0	0
2369:	1	1	1	1	0	1	2	1
2377:	0	2	1	1	0	0	0	0
2385:	1	0	0	0	0	0	0	2
2393:	0	0	2	0	1	0	0	0
2401:	2	0	0	1	0	2	0	0
2409:	0	1	0	0	0	1	0	3
2417:	0	0	0	0	1	0	1	0
2425:	1	1	0	0	0	0	0	0
2433:	0	0	1	1	0	0	1	0
2441:	1	0	0	1	1	1	3	0
2449:	1	1	0	0	0	1	0	0
2457:	0	0	0	0	0	0	0	1
2465:	0	2	0	0	0	1	0	0
2473:	2	2	1	0	1	0	0	3
2481:	0	0	0	1	0	0	0	1
2489:	1	0	0	1	0	1	1	0
2497:	0	0	0	0	0	0	0	0
2505:	1	0	0	0	0	2	0	0
2513:	1	0	0	0	0	0	0	1
2521:	0	0	0	0	1	0	0	1

2529: 0 0 0 0 0 0 0 1 0

Sample Title: SEDIMENT 2016-03-16B DUP

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2537:	0	0	0	0	0	0	0	0
2545:	0	1	0	1	0	0	1	0
2553:	0	0	0	1	2	1	1	0
2561:	0	1	0	1	1	0	0	0
2569:	0	0	0	1	0	0	0	1
2577:	1	0	1	0	0	0	0	0
2585:	1	0	0	0	1	1	1	2
2593:	0	0	0	1	0	1	0	0
2601:	0	0	0	0	0	0	1	0
2609:	0	0	0	5	14	16	4	2
2617:	0	0	0	0	0	0	0	0
2625:	0	0	0	0	0	0	0	0
2633:	0	2	0	0	0	0	0	0
2641:	0	0	0	0	0	0	1	0
2649:	0	0	1	0	0	0	1	1
2657:	0	0	0	0	0	0	0	0
2665:	0	1	0	0	0	0	1	0
2673:	0	0	0	0	0	0	0	0
2681:	1	0	0	0	0	0	1	0
2689:	1	0	0	0	0	1	0	0
2697:	0	0	0	0	0	0	0	0
2705:	0	0	0	0	0	0	0	0
2713:	0	0	0	0	1	0	1	0
2721:	0	0	0	0	0	0	0	0
2729:	0	1	0	0	0	0	0	0
2737:	0	0	0	0	3	0	0	0
2745:	1	0	0	0	0	0	0	0
2753:	0	0	0	0	0	0	0	0
2761:	1	0	0	0	0	0	0	0
2769:	0	0	0	0	0	0	1	0
2777:	0	0	0	0	0	0	0	0
2785:	1	0	0	1	0	0	0	0
2793:	1	0	0	0	1	0	1	0
2801:	0	1	0	0	1	0	0	0
2809:	0	1	0	0	0	0	0	0
2817:	0	0	0	0	0	0	0	0
2825:	1	0	0	0	0	0	0	0
2833:	0	0	1	1	1	0	0	0
2841:	0	0	0	0	0	0	0	0
2849:	1	0	0	0	0	0	0	0
2857:	1	1	0	0	1	0	0	1
2865:	1	1	0	0	1	0	0	0
2873:	0	0	0	0	0	0	2	0
2881:	0	0	0	0	0	1	0	0
2889:	1	0	0	0	0	0	0	0
2897:	0	0	0	0	0	0	0	0
2905:	0	0	0	0	0	0	0	0
2913:	0	1	1	0	0	0	0	0
2921:	0	1	0	0	0	1	0	0
2929:	0	0	0	2	0	0	1	0
2937:	0	1	0	1	0	0	0	0
2945:	0	0	0	0	0	0	0	0
2953:	0	1	0	0	0	0	0	0

2961: 0 1 0 0 0 0 0 0

Sample Title: SEDIMENT 2016-03-16B.DUP

Channel	-----	-----	-----	-----	-----	-----	-----	-----
2969:	0	0	0	1	0	0	0	0
2977:	0	0	1	0	0	0	0	0
2985:	1	0	0	0	0	0	0	0
2993:	0	0	0	0	0	0	0	1
3001:	0	0	0	0	1	0	1	0
3009:	1	0	0	0	0	0	0	0
3017:	0	0	0	0	0	0	1	0
3025:	0	0	0	0	0	0	0	0
3033:	1	0	0	1	0	0	0	0
3041:	0	0	0	1	0	0	0	0
3049:	0	0	0	0	0	0	0	1
3057:	0	0	0	0	0	0	0	0
3065:	0	0	0	0	0	0	0	0
3073:	0	0	0	0	1	1	1	0
3081:	0	0	1	0	0	1	0	0
3089:	0	0	0	0	0	1	0	0
3097:	0	0	1	0	0	0	0	1
3105:	0	0	0	0	0	0	0	0
3113:	0	0	0	1	0	1	0	0
3121:	0	0	0	1	0	0	0	1
3129:	1	0	0	0	0	1	0	0
3137:	0	0	0	0	0	0	0	0
3145:	1	0	0	0	0	0	0	0
3153:	0	1	0	0	1	0	0	0
3161:	0	0	0	0	1	0	0	0
3169:	0	0	0	0	0	1	0	0
3177:	3	0	1	0	1	0	0	0
3185:	1	0	0	0	0	0	0	0
3193:	0	0	0	0	0	0	0	1
3201:	0	0	0	0	0	1	0	0
3209:	0	0	0	0	0	0	0	1
3217:	0	0	0	0	0	0	1	0
3225:	0	0	0	0	0	0	0	0
3233:	0	0	0	0	0	0	1	2
3241:	0	0	0	0	1	0	0	0
3249:	0	0	0	0	0	0	0	0
3257:	0	0	0	0	0	0	1	0
3265:	0	0	0	0	1	0	0	0
3273:	0	0	0	0	0	0	0	0
3281:	0	0	0	0	0	1	1	0
3289:	0	0	0	0	0	0	0	0
3297:	0	0	0	0	0	0	0	0
3305:	0	0	0	0	0	0	0	0
3313:	0	0	0	0	0	0	0	0
3321:	0	0	0	1	0	0	1	0
3329:	0	0	0	0	0	0	0	0
3337:	0	0	0	0	0	0	0	0
3345:	1	0	1	0	0	0	0	1
3353:	0	0	0	0	0	0	1	0
3361:	0	0	0	0	1	0	0	0
3369:	0	1	1	1	0	0	0	0
3377:	0	0	0	0	0	0	0	0
3385:	1	0	0	0	0	0	0	0

3393: 0 0 0 0 0 0 0 0

Sample Title: SEDIMENT 2016-03-16B DUP

Channel	-----	-----	-----	-----	-----	-----	-----
3401:	0	0	0	0	0	0	0
3409:	1	0	0	0	0	0	2
3417:	0	0	0	0	0	0	0
3425:	0	0	0	0	0	0	0
3433:	0	0	0	0	0	0	0
3441:	0	0	0	0	0	0	0
3449:	1	0	0	0	0	0	0
3457:	0	0	0	0	0	0	1
3465:	0	0	1	0	0	0	0
3473:	0	0	0	1	1	0	0
3481:	1	0	0	0	0	0	0
3489:	1	0	0	0	0	0	0
3497:	1	0	0	0	1	0	0
3505:	0	0	0	0	0	0	0
3513:	0	0	0	0	0	0	1
3521:	1	0	0	0	0	0	0
3529:	0	1	0	0	0	0	0
3537:	0	0	0	0	0	0	0
3545:	0	0	0	1	0	0	0
3553:	0	0	0	0	1	0	0
3561:	0	0	0	0	0	0	0
3569:	1	0	0	0	0	0	1
3577:	0	0	0	0	0	0	0
3585:	0	0	0	0	0	0	0
3593:	0	0	0	0	1	0	2
3601:	0	0	0	0	0	0	0
3609:	0	0	0	0	0	0	1
3617:	0	2	0	0	0	0	0
3625:	0	0	0	1	0	0	0
3633:	0	0	0	0	0	0	0
3641:	2	0	0	1	0	0	0
3649:	0	0	0	0	0	0	0
3657:	0	0	0	0	0	0	0
3665:	0	0	0	0	0	0	0
3673:	0	0	0	0	0	0	0
3681:	0	0	0	0	0	0	0
3689:	0	0	0	0	1	0	0
3697:	0	0	0	0	0	0	0
3705:	0	0	0	1	0	0	0
3713:	0	0	0	0	0	0	1
3721:	0	0	0	1	0	0	0
3729:	0	0	0	0	0	0	0
3737:	0	0	0	0	1	0	0
3745:	0	0	0	0	1	0	0
3753:	0	0	0	1	0	0	0
3761:	0	1	0	0	0	0	0
3769:	0	0	0	0	0	0	0
3777:	0	0	1	0	0	0	0
3785:	1	0	0	0	0	1	1
3793:	0	0	0	0	0	0	0
3801:	0	0	0	1	0	0	0
3809:	0	0	0	0	0	0	0
3817:	1	1	0	0	1	0	0

3825: 0 0 0 0 0 2 0 0

Sample Title: SEDIMENT 2016-03-16E DUP

Channel	-----	-----	-----	-----	-----	-----	-----	-----
3833:	0	0	0	0	0	0	0	0
3841:	0	1	0	0	0	0	0	0
3849:	0	0	1	0	0	0	0	0
3857:	0	0	0	0	0	1	0	0
3865:	0	0	0	0	0	0	0	0
3873:	0	0	0	0	0	0	0	0
3881:	0	0	0	0	0	0	0	0
3889:	0	0	0	0	0	0	0	0
3897:	0	0	0	0	0	0	0	0
3905:	0	1	0	0	0	0	0	0
3913:	0	0	0	0	0	0	0	0
3921:	0	0	1	0	0	0	0	0
3929:	0	0	0	0	0	0	0	0
3937:	0	0	1	1	0	0	1	0
3945:	0	0	0	0	0	0	1	0
3953:	0	0	1	0	0	0	0	0
3961:	1	1	0	0	0	0	0	1
3969:	1	0	0	0	0	0	0	0
3977:	0	1	0	0	0	0	1	0
3985:	0	1	0	0	0	0	0	2
3993:	0	0	0	0	0	0	0	0
4001:	0	0	0	0	0	0	0	0
4009:	0	0	0	0	0	0	1	0
4017:	0	0	0	0	0	0	0	0
4025:	0	0	0	0	0	0	0	0
4033:	0	0	0	0	0	0	0	0
4041:	0	1	0	1	1	0	0	0
4049:	0	0	0	0	0	0	1	0
4057:	0	0	0	0	0	0	0	0
4065:	0	0	0	0	0	0	0	1
4073:	0	0	0	1	0	0	0	0
4081:	0	0	0	0	0	0	0	0
4089:	0	0	0	0	0	0	1	0

ROI Type: 1

ROI Type: 2

***** GENIE QUALITY ASSURANCE *****

Last Results Report
4/11/16 5:51:27 AM

4/11

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000002B.QCK

Detector: GE2
Geometry: <None>
Certificate: <None>
Sample ID: QA Background Ch
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 4/11/16 5:36:12 AM
Measurement Date: 4/11/16 5:36:14 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 900.1 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
DAILY BKG CT RATE GE2 [SD:-2.6135E+035+/-*****]	4.1300E+000	3.9193E-002 < : : : >
Trend Test: The last	9 samples exhibit a bias trend.	

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

***** GENIE QUALITY ASSURANCE *****

Last Results Report
4/11/16 5:30:15 AM

✓
Y111

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000002GAS-1401C.QC

Detector: GE2
Geometry: <None>
Certificate: GAS-1401
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 10/1/14 12:00:00 AM
Measurement Date: 4/11/16 5:14:33 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 930.7 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54keV	5.9180E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Peak centroid 661.65 keV	6.6155E+002	
Boundary Limits: [6.600E+002, 6.640E+002]		< : : : >
Peak centroid 1332.49 ke	1.3326E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Peak centroid 1836.1 keV	1.8364E+003	
Boundary Limits: [1.834E+003, 1.838E+003]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Am-241	1.7284E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Cs-137	2.0175E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.1448E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Y-88	2.5054E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Decay corrected activity	1.5304E+005	
Boundary Limits: [1.224E-001, 1.836E-001]		< : : : >
Decay corrected activity	6.1745E+004	
Boundary Limits: [4.971E-002, 7.457E-002]		< : : : >

Decay corrected activity 9.8872E+004
Boundary Limits: [7.978E-002, 1.197E-001]

< : : : >

Parameter Description
[Mean +/- Std. Dev.]

Value

Deviation/Flags
< LU : SD : UD : BS >

Decay corrected activity 2.0127E+005
Boundary Limits: [1.714E-001, 2.571E-001]

< : : : >

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

***** G E N I E Q U A L I T Y A S S U R A N C E *****

Last Results Report
4/13/16 6:09:37 AM

4117

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000003B.QCK

Detector: GE3
Geometry: <None>
Certificate: <None>
Sample ID: QA Background Ch
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 4/13/16 5:54:22 AM
Measurement Date: 4/13/16 5:54:25 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 902.8 seconds

Parameter Description	Value	Deviation/Flags
[Mean +/- Std. Dev.]		< LU : SD : UD : BS >
DAILY BKG CT RATE GE3	2.5560E+003	2.0501E-001
[SD = 2.2684E+003+/-1402.6]		< : : : >

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

***** G E N I E Q U A L I T Y A S S U R A N C E *****

Last Results Report
4/13/16 6:56:20 AM

✓
4/17

QA File: \\OR-GAMMA1\ApexRoot\Countroom\QA\D0000000003GAS-1402C.QC

Detector: GE3
Geometry: <None>
Certificate: GAS-1402
Sample ID: QA Calibration C
Sample Desc: QA Count
Sample Quantity: 1.0000E+000
Sample Date: 10/1/14 12:00:00 AM
Measurement Date: 4/13/16 6:40:39 AM
Elapsed Live Time: 900.0 seconds
Elapsed Real Time: 928.7 seconds

Parameter Description [Mean +/- Std. Dev.]	Value	Deviation/Flags < LU : SD : UD : BS >
Peak centroid 59.54 kev	6.0000E+001	
Boundary Limits: [5.800E+001, 6.100E+001]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak centroid 661.65 kev	6.6162E+002	
Boundary Limits: [6.600E+002, 6.640E+002]		< : : : >
Peak centroid 1332.49 ke	1.3321E+003	
Boundary Limits: [1.331E+003, 1.334E+003]		< : : : >
Peak centroid 1836.1 kev	1.8353E+003	
Boundary Limits: [1.833E+003, 1.838E+003]		< : : : >
Peak FWHM Am-241	1.3999E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Trend Test: The last 9 samples exhibit a bias trend.		
Peak FWHM Cs-137	1.9986E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Co-60	2.2064E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Peak FWHM Y-88	2.5989E+000	
Boundary Limits: [5.000E-001, 3.000E+000]		< : : : >
Decay corrected activity	1.7378E+005	
Boundary Limits: [1.223E-001, 1.834E-001]		< : : : >
Decay corrected activity	6.4429E+004	
Boundary Limits: [4.969E-002, 7.453E-002]		< : : : >

Decay corrected activity 9.7895E+004
Boundary Limits: [7.972E-002, 1.120E-001]

< : : : >

Parameter Description
[Mean +/- Std. Dev.]

Value

Deviation/Flags
< LU : SD : UD : BS >

Decay corrected activity 1.9927E+005
Boundary Limits: [1.713E-001, 2.569E-001]

< : : : >

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)